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Ladies and Gentlemen,

I sincerely thank you for the great honour you have done me by electing me to the presidential chair for the first Radiological Section of the Eighth All-India Medical Conference. I have serious misgivings as to how far I shall be able to carry out the duties and responsibilities of this high office, but with your kind co-operation and help, I am confident that our section will be a complete success. This must be a matter of gratification to you, as it is to me, since it shows that the importance of Radiology as a diagnostic and therapeutic agent is now well recognised by the medical world in India, by arranging this year a Radiological Section for the first time in the All-India Medical Conference. There was a time in India when the older school of physicians and surgeons looked upon radiologists as little more than mere photographers and upon electro-therapy as little short of quackery. But the recent rapid advances in Radiology, the increasing number in this country of well-trained and specially qualified persons holding foreign diplomas in this line and above all, the ever-increasing proofs of the importance and utility of Radiology, as a diagnostic and therapeutic agent useful in solving many difficult problems and curing many intractable diseased conditions have all convinced the medical world that Radiology must be considered as an important branch of the medical science. It is good that a sense is slowly developing amongst the Medical profession, that radiological interpretation and application, form a specialized study and that the opinion of the Radiologist must be accepted as authoritative in all questions regarding the interpretation of the skiagrams and radio-therapy. The very inclusion of a Radiological Section this year, as I have said above, is a welcome sign that any lingering prejudices against radiology are fast disappearing, and now it rests upon the radiologists to co-operate and make united efforts to place Radiology on a firm footing. I am glad that the Indian Radiological Association has been established to carry out this kind of work, but I might mention what further should be done to achieve these ends.

Quackery.

The first and foremost thing that must be done in order to place radiological practice on a sound basis, is to get legislation passed that would prevent non-qualified and untrained persons from practising as radiologists. The unsatisfactory and sometimes disastrous results produced by such quacks are mainly responsible for most of the prejudices, which are current against Radiology. X-Rays, radium rays and the various electrical currents used in electro-therapy are capable of causing great and permanent harm and sometimes even loss of life, when improperly handled by persons who do not know their properties. It is really strange that in our country where even motor-drivers are not allowed to drive without a proper license, such powerful agents as X-Ray, radium and electrical

currents are permitted to be handled by men who may not possess the least knowledge of Radiology. In Europe, even the nurses and assistants, who work in radiological departments, are required to pass a special examination in radiographic and electro-therapeutic technic. But here in India there is no law to prevent a person who does not know even the A B C of medicine or radiology, from buying an ultra-violet lamp, a high frequency machine and sometimes even an X-Ray apparatus and from practising as a radiologist under a big name. Both in fairness to the proper radiological practice and in the interests of the patients who fall victims to such quackery, we must all try to move the Government to pass laws prohibiting the use of electro-medical and X-Ray apparatus by unqualified and unlicensed persons.

Teaching Centres and Examinations in Radiology.

There is a great necessity of providing teaching centres in this country for those who intend to specialize in Radiology, and of holding examinations for the purpose of granting degrees or diplomas as it is not possible for many to go abroad for qualifying in this line. Most of the big hospitals here have now excellent X-Ray departments and these will serve for practical post-graduate training in Radiology. Where necessary, even some of the fully-equipped private institutions, after due inspection, should be recognised as training centres in Radiology. A course of lectures in Radiology by eminent radiologists may be arranged for those intending to qualify. The different physics laboratories throughout India could provide the practical and theoretical teaching of higher physics necessary to understand Radiology. No university or any recognised Body in India grants diplomas in Radiology at present. It would greatly help the cause of Radiology if the Indian Universities could be persuaded to hold examinations and grant diplomas in Radiology; but if it be not possible, the Indian Radiological Association at least should proceed in this matter, by appointing a committee to consider the establishment of a School of Radiology and the granting of diplomas. I wish to emphasize this point as I consider it to be of vital importance and in my opinion, sufficient material is now available in this country for making an immediate start.

Radiological Magazine.

There is, no doubt, a great necessity of having a radiological magazine as it would be very interesting and instructive not only to the radiologist, but to the clinician also, as it would contain intricate and instructive clinical material. Publication of clinical and radiological data with all the available facts and end results would materially help in avoiding the common pitfalls in clinical diagnosis and radiological interpretations. Exchange of mutual experiences of successful cases radiologically treated would advance the cause of Radiology. With the vast material now available, the radiological magazine would not find it difficult to get good and original articles. The magazine with its skiagrams will certainly be costly; but its utility would always outweigh any consideration of cost.

Standard of Radiological Practice.

The standard of radiological practice would be raised by its own efficacy and its estimation by others. In order to achieve the former, the radiologist must try to investigate every case carefully by best-known methods and then try to explain all the clinical signs and symptoms of the case. He, after thoroughly satisfying himself, should form his own diagnosis and give his independent opinion. Every radiologist must remember that his duty is to give the diagnosis to the best of his ability and not merely take a skiagram of the affected region and leave the interpretation to the physician or surgeon. This tendency has done great harm to the cause of Radiology and often lowered its value. I would also appeal to the Medical profession in general to respect the radiologist as a specialist in his own line and in fairness to all concerned it is essential that after giving all the clinical data and history of the case, the radiologist be left to follow the best possible treatment in his line for the case. Just as it would be foolish and discourteous on the part of the radiologist to give instruction in the physician's or surgeon's work, it would be equally so when others trespass on the radiologist's field.

Recent Advances in Radiology.

The importance of Radiology becomes clear when one reviews the great and rapid advances made in Radiology during the last twenty years. In fact, no other branch of medical science has advanced so rapidly as Radiology; and distinct signs are seen that it will revolutionise our conceptions regarding the diagnosis and treatment of many pathological conditions.

Improvement in Apparatus.

The improvements in the design and construction of X-Ray apparatus are progressing with astonishing rapidity. The coil and the mercury-jet interrupter which went often out of order and required frequent expert attendance, has now been replaced by oil-immersed step-up transformers of far greater output and easy regulation. Switch-tables are provided for tele-control, and easy but accurate pre-adjustments of all the values required. Voltage-regulation has been rendered very fine and precise by the introduction of the auto-transformer system of voltage-regulation, and accurately calibrated voltmeters have taken the place of the spark-gap. Mechanical rectification with its great noise, sparking and consequent fall in voltage and production of poisonous gases such as nitrous oxide, is slowly being discharged in favour of valve-tube-rectification which ensures a noiseless operation, very little drop of voltage and passage of a practically constant current through the X-Ray tube. Gas-tubes have now practically gone out of the field and the Coolidge-type of the X-Ray tube with complete protective shield holds the market. Powerful X-Ray tubes of the line-focus type such as the Multix which can take up to 300 milliamp. current at 60 K. V. are manufactured and such tubes make it possible to take tele-roentgenograms with a film-focus distance of 2 meters without the use of any intensifying screens, with exposures of only a fraction of a second. Special switches have been incorporated for taking serial photos of the duodenum and in America and Germany X-Ray cinema-films have been taken to demonstrate the movements of the internal organs. The introduction of the Potter Bucky Diaphragm has greatly improved the quality and definition of the skiagrams by cutting off the diffuse radiation. Powerful therapy tubes of much higher output have been produced and the All-protected Therapy tube newly placed in the market has obviated the use of lead-lined rooms and heavy lead-rubber protection for the patient. Apparatus has now been put forth in the market for measuring the actual output of the X-Ray tube in R units per minute.

The modern diathermy machine is free from all Faradic currents so that there is no fear of the patient or operator getting a bad shock as before. The spark-gap is kept constant and the current is regulated by adjusting the resistance. The currents produced are such that the deeper tissues are raised to a much higher temperature without producing unpleasant burning sensations on the skin where the pads are applied. Similar improvements are taking place in the other electro-medical apparatus. The carbon-arc lamp has been replaced by the mercury-vapour quartz lamp owing to its higher ultra-violet content and absence of heat-radiation. The water-cooled Kromayer lamp is introduced for treatment of localised lesions. Films of superior quality and ultra-rapid speed are now available and improvements have also taken place in the quality of the intensifying screens.

Advances in X-ray Diagnosis.

X-Ray has brought to light many new diseases such as Schlatter's disease, Kohler's disease, Kummell's disease, Perthe's disease, sacralization of the 5th lumbar vertebra, calcinosis intervertebralis and diverticulitis. The importance of setting fractures under the screen to ensure better apposition and consequently more satisfactory functional results, is now generally recognised. The usefulness of radiography in solving many difficult clinical problems has rendered its adoption more general and extended its use.

Many new methods have been introduced of late in the X-Ray diagnosis also. Stereoscopic examination has been extended to the alimentary and pulmonary systems. Tele-roentgenography and orthodiagraphy have obtained a very high diagnostic value in cardiology. A tele-roentgenogram taken with a film focus distance of two meters and with an exposure of one-tenth of a second is now-a-days considered essential for accurate diagnosis of diseases of the heart and aorta,

because it reproduces almost an exact outline of the size of the heart and aorta. Tele-roentgenograms of the chest taken without the use of the intensifying screens show very early lesions in the lungs and pleuræ. The introduction of Sodium-tetraiodophenolphthalein and its preparations for gall-bladder visualization and of Uroselectan for uretero-pyelography has greatly improved our means of diagnosing diseases of the gall-bladder and kidneys respectively and also studying their functional activity.

Harmless, non-irritant, opaque liquids such as Lipiodol and Iodipin have been introduced for investigations of the cavities, sinuses and fistulous tracts. Iodipin or Lipiodol when injected into the cisterna-magna helps in the diagnosis and location of the spinal tumours, into the bronchi it helps in the diagnosis of bronchiectesis and blockage of a bronchus, into the uterine cavity it helps to diagnose the potency of the fallopian tubes and developmental anomalies of the uterus, into the sinuses and fistulous tracts it helps to trace them to the end.

Ventriculography has been introduced very recently for the diagnosis of brain tumours, but it requires a special and great surgical skill and involves great risks also.

The X-Ray appearances of different organs during their normal physiological activity and in various pathological conditions have been studied in closer detail and now even border-line cases need not escape detection.

Advances in Radio-therapy.

Radio-therapy is also advancing with rapid strides. The advance in X-Ray physics has done away with the indefinite and empirical nature of the former X-Ray dosage. The international R unit has now been universally accepted as a unit of X-Ray dosage. The output of X-Ray tubes in R units per minute is measured by accurate instruments, so that seasonal and other variations in the output of the tube can be easily found out and the doses regulated accordingly. These improvements enable one to administer X-Ray dosage with almost mathematical accuracy and the dangers of X-Ray burns and under-dosage are minimised. Factors which govern the percentage depth dose have been investigated with great accuracy and now the percentage of the superficial dose that reaches a particular depth for a particular quantity and quality of radiation can be worked out with great precision. This enables us to treat a deep-seated lesion choosing different ports of entry and distributing dosage in such a way that the deep lesion gets the required amount of dose in R units without producing any damage to the skin at the ports of entry selected. The exact dosage required for various pathological conditions has been worked out in R units and this materially helps in getting satisfactory results.

The older method of giving massive doses is now abandoned in favour of safer methods of giving small doses at shorter intervals on the lesion to be treated until the latter receives the required amount of radiation calculated in R units representing the required percentage of the U. S. D. All these changes point to the great precision, accuracy and consequent safety lately attained in X-Ray therapy.

X-Ray therapy has been employed with success in many pathological conditions, but its use is attended with good results, particularly in skin diseases, tubercular glands, lymphadenoma, exophthalmic goitre and uterine hæmorrhage.

Radium.

A great advance has been made in radium-therapy also. Satisfactory results are obtained in epithelioma, rodent ulcer, nævi, keloid and small patches of eczema and psoriasis. Uterine hæmorrhages due to various causes are checked by one or two treatments of radium. Cancer of the cervix and breast tumours also respond fairly well to the radium therapy. Radium also gives appreciable benefit in cases of tubercular adenitis and exophthalmic goitre.

Malignant Tumours.

In treating sarcoma and carcinoma where an operation cannot be performed, one sees interesting results such as the diminution in size of the tumour, disappearance of pain and the whole invasive process is held in abeyance. Some inoperable cases have been rendered operable by a

preliminary radium exposure. It can also be employed with benefit in all post-operative cases of malignancy to minimise the risk of recurrence.

The encouraging results obtained by radium therapy in malignant tumours have led to the adoption of what is called surgery of access. Tubes containing large quantity of radium were used formerly but these have now been abandoned in favour of platinum needles containing only about one to two milligrams of the radium element each. The insertion of these needles into different parts of the growth ensures uniformity of radiation on all parts of the tumour and thus gives better results.

CONCLUSION.

So far I have outlined in brief the position to which radiology has risen within the last twenty years. The progress of the past years certainly forecasts a very bright future for Radiology and it is the duty of every radiologist to try to make it brighter than before. There is yet much to be investigated and achieved in the realm of Radiology. Before concluding let me thank you all, Ladies and Gentlemen, for the patient hearing you have given me and let us now enter into our deliberations in a spirit that would bear fruitful results.

The Possibilities and Limitations of X-Rays as a Diagnostic Agent

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Since the announcement by VON ROENTGEN in December, 1895, of the discovery of an unknown ray which shewed the property of penetrating substances that were opaque to ordinary light and of acting upon photographic film in the same way as the actinic rays of the solar spectrum—much water has flown down the river and this peculiar ray has been utilised in more ways than one in the service of humanity. The most important use to which this ray has been put, has been in the diagnosis of diseases. In the earlier years of its use in diagnostic medicine X-Ray, as this ray was named by its inventor, was used chiefly in the detection of fractured bones, dislocated joints, or the presence of metallic foreign bodies inside human organs and tissues. Gradually, with the more thorough understanding of its nature and properties and the development of the scientific side of its technical application, it has come more and more in contact with the other specialties of medicine, and to-day there is hardly any branch of medicine in which its aid is not invoked for elucidating some of its complicated problems. The development of the Science of Roentgenology within a short space of 37 years has been phenomenal as is evidenced by the rapidly increasing new fields of its application.

This rapid expansion of the usefulness of the specialty has not, however, taken place without some material attendant disadvantages. The discoveries of the spheres of its utility have come about in such quick succession that it has been difficult for the rank and file of the medical profession to keep pace with them. That is why we find that whereas twenty years ago an X-Ray examination was thought of only when a bone was suspected to be fractured or a coin or a bullet was thought to be lying inside the human body—to-day practically every patient consults a roentgenologist in the hope of getting his disease diagnosed by the all-powerful magic ray with which the latter works. There is a widespread belief in the minds of the laity that every disease under the sun which human flesh is heir to can be diagnosed with the aid of this wonderful ray. Unfortunately there are a good many practitioners and even a number of consultants who think in the same way. It would certainly be a proud day for the Science of Roentgenology when it will be able to fulfil this expectation, but that day has certainly not been attained yet. Our position to-day with regard to the diagnostic powers of the Roentgen ray is this: that while it is capable of differentiating between almost all the diseases that affect the osseous sys-

tem, the lungs, the stomach, the intestines, the surgical diseases of kidneys, the bladder etc., there are organs in the differential diagnosis of the diseases of which its use is very limited. And it is necessary from many points of view that these limitations of its use as a diagnostic agent should be as widely known as the value of its possibilities should be extensively circulated. The reasons for this statement are obvious, because from a lack of this knowledge many patients suffering from diseases in which the diagnostic value of X-Ray is practically nil, have been referred to radiologists for an X-Ray examination and in many instances they have been submitted to such examinations with no benefit to themselves nor to the referring physicians. The patients under such circumstances are put to unnecessary expense; and when they come to learn that the magic ray has been of no use in establishing a diagnosis of their diseases they blame the poor radiologist and discredit his specialty. Such practices are neither to the good name of the science of medicine nor to the reputation of a growing specialty such as Roentgenology is. In an endeavour to analyse the causes which lead to such patients being referred to radiologists for their opinion, I have come to the conclusion that this misconception of the possibilities of the X-Ray as a diagnostic agent, is due to a want of knowledge, on the part of the general practitioners who refer such cases to the radiologists, of the fundamental properties of the X-Rays and of the principles on which the science of X-Ray diagnosis is based. It is generally believed that an X-Ray film is a photograph of the part which has been submitted to examination by the rays. This is a very erroneous conception and should be completely got rid of. It is not a picture at all in the sense in which that word is used. On the contrary it is a *Shadowgraph*. It is produced by interposing the part under examination between the source of the X-Ray and the photographic film, and the property of the X-Ray which is utilised in its production, is the varying absorptive power possessed by substances of different densities and therefore of different atomic weights for this particular kind of radiation. It is well-known that if an opaque substance is placed in the path of light rays striking a white surface what is produced on that screen by the intervening substance is not its image but its shadow. That is exactly what happens when a limb, for example, is placed on an X-Ray film and the X-Ray tube is operated from above both of them. The bones inside the limb containing in their structures elements such as calcium, phosphorous, sulphur etc., of high atomic weight absorb more of the rays proceeding from the tube to the film than the flesh which is made up of elements of comparatively lower atomic weights, such as C, H, O, and N. The sensitive chemical substance present in the film will thus be acted upon differentially in different sections. The part of the film lying directly beneath the bones will receive lesser quantities of X-Rays than the parts which lie against the flesh and the latter again will receive lesser quantities than the parts which are totally uncovered. In the finished film these various areas will appear as the light portion representing the bones, the darker portion the flesh, and the darkest portion the place where nothing but air intervened between the X-Ray tube and the sensitive film. It will thus be seen that an X-Ray film is a true shadowgraph of the part which has been thus examined.

In utilising these shadowgraphs for the purpose of deriving data in diagnostic work it is obvious that the former should be as full of detail as possible *i.e.*, they should shew what is known in photographic language "good contrast," and for this we are again dependent on the selective absorptive power of the different tissues of the body for X-Rays. Let us consider here the case of two patients who have been sent to a radiologist for examination; one patient suspected to be suffering from tuberculous deposit in the lungs and the other malignant changes in the liver. The lungs as we know, are organs which are made up of very thin walled air sacs occupying the two sides of the thoracic cavity separated by a centrally situated bag containing a large quantity of a heavy fluid; the liver, on the other hand, is a solid organ possessing a length, a breadth, and a depth of about 6—8 inches lying in a cavity surrounded by or in immediate contact with organs which practically have the same relative density as its own *viz.*, the spleen, the kidneys, the intestines containing fœcal matter, etc. Imagine now what will happen when these two organs are submitted to X-Ray examination. In the case of the lungs we will get a shadowgraph in which the regions

occupied by the lung tissue will appear as dense black areas compared to the lighter area in the centre which would represent the regions where lie the sternum in front, the heart with its blood content in the middle, and the vertebral column behind. On account of the great difference in the densities of the organs producing this shadowgraph we will find in it good contrast between the central and the peripheral shadows. Not only this. Owing to the normal content of the Lung being air, the lightest substance compared to any tissues of the human body, the development of any pathological condition in the Lung which results in the displacement of its air content and the replacement of the same by some solid or fluid substance, will at once be apparent in the X-Ray film on account of the marked difference in densities of media through which the rays will pass in their march towards the film. We will thus be enabled to detect any departure from the normal in such films provided the pathological tissue offers a greater resistance to the passage of the rays than its neighbouring air containing vesicles. Let us now turn to the consideration of the patient who has a diseased liver. The normal shadowgraph of the liver will shew a uniform triangular shadow mostly below the right leaf of the diaphragm and extending almost to the level of the right iliac Crest in the mid-axillary line. Imagine now a small area in this organ in which the normal liver cells have been replaced by a growth of carcinoma. Does the density of the new tissue differ materially from the tissues which it has replaced or the tissues in its immediate neighbourhood? No. Its density is practically the same as that of any other portion of the liver. Contrary therefore, to what obtains in the case of the Lungs under similar circumstances—we have here a condition which will produce the same shadowgraph as the normal liver. The conditions favourable to the production of contrast being absent the shadowgraph or the X-Ray picture as it is commonly known, will be of no use in detecting the presence of the pathological tissue. Similarly when a case is sent for examination for a suspected splenic tumour, apart from saying whether there is gross alteration in the size and shape of the organ the Radiologist will not be in a position to help the clinician much in the ultimate diagnosis of the condition. Brain Tumours can be diagnosed if there is certain indirect evidence present in the film. *e.g.*, alteration in the size of Sella Turcica, separation of the sutures, alteration in the size of the diplocic veins, etc., or from pneumo ventriculography in which air is injected into the ventricles of the brain and the head is then subjected to X-Ray examination. But to expect that an ordinary film in the early stage of the disease will shew evidence of the presence of the tumour and to feel disappointed if the Radiologists' report is inconclusive would be betraying an utter lack of the knowledge of the fundamental principles on which the Science of Skiagraphy is based. I have had patients sent to me with notes like the following: "Please examine the brain and state whether hæmorrhage is present inside," "Examine the heart and report whether the valves are diseased," "Patient, with abdominal tumour sent for diagnosis," "Kindly examine and see if a thorn is present in the limb," etc., etc. These patients come in the belief that X-Rays possess ultra-microscopic properties and that all diseases can be seen by a mere application of the X-Ray tube. I well remember the remarks of a patient who, on being told that tubercle Bacilli could not be seen by X-Rays, observed in profound surprise that he was told by his family physician (a village doctor of pre-Roentgen Era) that modern Science had developed to such an extent that with the help of the different rays the doctors of the great medical colleges could now count how many arteries, veins, and nerves were present in the human body. Epileptics and insane patients have been sent on medical advice to radiologists for diagnosis of the disease in their brains; patients with ulcers in throat, palate, and larynx, who should have gone to a Oto Rhino Laryngologist have been referred to the X-Ray Department for the taking of a film to shew where the ulcer lies, how big it is, and what germ is causing it. I am mentioning these instances not to hold up to ridicule the members of the profession under whose advice such patients apply for X-Ray examination; my object is to shew that in the present state of its development the science of Roentgenology has large limitations which it will be good for the profession to know both for its own sake as well as for the sake of the patients.

There is another aspect of the practice of Roentgenology which deserves a passing mention while discussing the limitations of X-Rays as a diagnostic agent before an audience of general practitioners. It is often found that a patient is sent for X-Ray examination of a certain system and is told by the referring physician what the cost of that examination is likely to be. Very often he is told that it will be something like Rs. 16/-. While there is no harm in giving the patient a rough idea of the probable cost—I think it is better to inform him that the figure mentioned is only an approximate one and that it may be considerably more than that sum. The reason for my broaching this subject is as follows: In many instances patients have come to me with a note from a doctor who wants my full report on the Lungs and the other thoracic contents. When these patients are told that the fees for such an examination will be near about Rs. 50/- they at once say that they were told that it would be not more than Rs. 16/-. The latter fee may cover the cost of the materials used, the overhead charges and the expert service of a medical specialist if only one skiagram is required to be taken or a rapid screen examination would give the information sought but in the class of cases mentioned above nothing less than 4 films will be necessary (1 postero Ant., 1 right Ant. oblique, 1 left Ant. oblique and 1 lateral) before a report as desired by the doctors could be given. It will be apparent that the fees mentioned by the doctor to his patient could not cover such a detailed examination. If it were possible for the Radiologist to give his opinion on one single film in such cases—no one would be more happy than he, but with the limitations of the agent which he uses in his diagnostic work this is at present impossible. Similarly, cases coming for diagnosis of gall stones and requesting to be examined for Rs. 16/- can only have an ordinary film taken of his gall bladder area, but such a film for the diagnosis of gall stones is of no use. In 95% of cases it will yield negative results. The modern method to be used in such cases consists in injecting or giving orally a dye the previous night and taking at least 3 if not 4 or 5 films at stated intervals the next day. This method of examination, choleystography as it is called, entails considerable expense, care, and specialistic knowledge on the part of the Radiologist and it will be easy to understand that such a special examination cannot be made at a low fee. Instances like these can be multiplied, but it is no use taking up your valuable time.†

I shall consider myself amply rewarded if the points I set about at the begining to bring before you will receive the consideration they deserve at your hands.*

†Recent researches are bringing in hitherto unexplored regions within the purview of the science of diagnostic radiology and it is not too much to expect that within a reasonable time practically every system of the human anatomy will receive attention at the hands of the Radiologists. May I appeal to the general practitioners whose relationship with the specialists practising the Science of Radiology should be of the most cordial nature and whose help and cooperation the latter values most in building up the foundations of his infant speciality, to keep themselves in touch with the developments that are taking place in the Science of Radiology by acquiring a few of the fundamental principles on which this science is based and to disseminate that knowledge amongst their lay clientele with a view to a better understanding of the possibilities and limitations of X-rays as a diagnostic agent?

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The Value of Radiography in the Diagnosis of Gastric and Duodenal Diseases

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I thank you very much for your kind invitation asking me to open the discussion on the value of X-Rays in the diagnosis of gastro-duodenal diseases. I consider it a great privilege in getting an opportunity to associate myself with your deliberations. I am only sorry that your choice is not well placed. You might have easily availed yourselves of the services of someone more experienced

than myself and profit by his wider experience and knowledge. Standing before you and realising the great knowledge that most of you possess in radiological diagnosis and treatment, I feel diffident in giving publicity to my limited experience. Lest my scanty knowledge limits your deliberations, I would at the outset request you, Sir, to allow a wider scope for discussion at this meeting.

Surgery owes a great debt to Radiology. The great boon that Lord Lister has put into our hands in the way of antiseptic surgery based on the epoch-making researches of Monsieur Pasteur and its subsequent developments has made it safe for the surgeons to dive into prohibited areas. Anæsthesia has taken away the horrors of a surgical operation. Radiology helps the surgeon to get the most direct and accurate information regarding various tissues and affords him a moral justification for his interferences. The great strides that surgery has made during the last thirty years would not have been possible without any one of these aids.

Of all the accessory methods of diagnosis of diseases of the stomach and duodenum opaque meal examination undoubtedly occupies the foremost position. The introduction and the great progress that has been made during recent years in the technique of opaque meal examination and the certainty with which in a large percentage of cases a definite diagnosis can be arrived at in gastro-duodenal affections, have made it indispensable as an aid in diagnosis. No surgeon would at the present day be justified in opening an abdomen without a corroborative diagnosis by the Radiologist. The certainty with which gastric and duodenal ulcers can be diagnosed by X-Rays has been estimated by some observers to be as high as 95%. These statistics have been prepared from records of cases where clinical and X-Ray findings have been verified on the operation table by no less an authority than Lord Moynihan. There are some observers who decry these methods of diagnosis and warn the medical profession that too much reliance and dependence on the accessory methods of diagnosis is depriving the profession of their clinical acumen, making them slaves to the radiologist, bacteriologist, biochemist and so on. It may be true to some extent that whenever we can have a ready diagnosis by other means we do not exert ourselves. But that is no reason why the science should be blamed. It is our duty to keep ourselves on our guard. The accessory methods should be sought for to corroborate our clinical findings and in difficult and doubtful cases help us in coming to a reasonable conclusion. There is no gainsaying that the introduction of opaque meal examination has greatly altered our conception of the diagnosis and treatment of gastro-duodenal ulcers, cancers and some other diseases of these organs.

Looking back to the last decade and tracing the incidence of gastro-duodenal operation, it is easy to find how quickly the surgery of the stomach and duodenum is getting popular in this country. Most of you are aware that proper gastro-duodenal radiography was practically non-existent here during the last decade and even before ten years ago. During our student days and when we were in the house-staff we had to depend on test meal examination alone for corroboration of our diagnosis. There were some clinicians who would refrain from diagnosing a case as one of gastric or duodenal ulcer if a history of hæmatemesis or mælena could not be obtained or tests for the presence of blood in test meal or stool examination was not positive. The then method of test meal examination has now fallen into disrepute. It is no wonder why clinicians would not risk a definite diagnosis in those days. The introduction of radiological investigation has altered the whole aspect of the diagnosis and treatment of gastric and duodenal lesions. It has taught us the limitations of medical treatment and the efficacy of surgical procedures is being more and more appreciated.

Radiological Evidences and Conclusions.

To the radiologist opaque meal examination affords direct and indirect evidences from which conclusions are arrived at. Examination under the screen after the ingestion of meal shows him the size, form and position, enables the radiologist to determine a dilated, atonic, dropped, pushed or adherent stomach. The motility of the stomach and its careful study, the rate of emptying, deformities and spasmodic contractions afford very important diagnostic data.

Direct proof of a gastric or duodenal ulcer depends on the demonstration of a " niche " or

crater filled with barium. It is not an easy task to demonstrate its presence, nor is it always possible. Having a mind's eye picture of the morphological character of an ulcer one can imagine that in order that a crater is formed and filled in and demonstrated it is either necessary for the ulcer to be fairly deep—the penetrating type—or that a ridge of hypertrophied mucous membrane must be present round about a shallow ulcer making it deep. Then comes the position of the ulcer. When the ulcer is situated at the lesser curvature a crater is easily demonstrated. When the ulcer is situated in the first part of the duodenum a crater can be seen in the duodenal bulb in some cases, where it is seen as a protrusion from one edge of the bulb. If this protrusion has a corresponding area of constriction on the opposite side the evidence is almost positive of a crater. If the cap is thrown into multiple spasms, the evidence is vitiated. With ulcers situated on one of the surfaces of the stomach, a skiagram in the oblique, lateral or any other altered position as determined by the radiologist may show the crater. With other improved technique an ulcer in the posterior wall of the stomach may be visualised in the form of a stellate or a circumscribed dense area.

A localised tenderness at a definite point can be elicited on screen examination in cases of an active ulcer. Tenderness of the duodenal bulb and the pylonic antrum are very definite evidences of the existence of an active organic lesion in the stomach or duodenum. In some cases of cholecystitis a tenderness may be felt and lead to error. Under the screen, however, the duodenal bulb can be manipulated towards the vertebral column and the exact spot of tenderness visualised. Though this serves to differentiate in most cases, it does not absolutely negativate a gall-bladder mischief as the tenderness may be caused by traction on adhesions.

The bulk of radiological evidences, however, are indirect. They consist in (1) Anomalies in Peristalsis, (2) Rate of emptying, (3) Spasms and deformities. None of the above evidences taken alone are conclusive in the making up of a diagnosis. Hypertonic stomach suggests the presence of some irritation either in the form of gastric or duodenal ulcers, cancers, cholecystitis, sometimes the appendix. But it has been noted that in all these conditions apart from a hypertonic condition a state of orthotonus or hypotonus may exist. To quote Lord Moynihan's language " It is interesting to find that the orthotonic, hypertonic and hypotonic types occur with equal frequency in cases in which a gastric ulcer has been proved to exist. In cases of duodenal ulcer an orthotonic condition was found in 44 per cent., a hypotonic in 24 per cent. and hypertonic in 32 per cent."

Localised spasms are generally due to an irritation of the muscles of the stomach secondary to irritation of the nerves at the base an ulcer. Apart from local causes there are some reflexes which may cause spasmodic contractions of portions of stomach. The causation of these spasms are not fully understood and the radiologists are not conclusive as to the value of these spasms. It was originally taught by Dr. Carmann of the Mayo Clinics that persistent spasm of the stomach or duodenum which was not due to intrinsic disease could be abolished by administration of atropine or belladonna. This view is now doubted to be true in all cases. The working rule, however, is that a spasm which resists all variations of posture, is present over a particular segment of the stomach at all times, and when in doubt examined on different occasions, and is not affected by belladonna given to the point causing a dry throat and dilated pupils, is an indication of some organic disease of the stomach or duodenum. A study of the behaviour of the pyloric sphinctre affords important data. In spasmodic contractions, to start with, the pylones contract regularly, but as the period of digestion progresses it is seen not to dilate with peristalsis and fail to evacuate its contents as regularly as before. In other words, a period of inertia supervenes. During the period of inertia in spasmodic conditions either as a result of local irritation or some reflex causes, some meal can be forced out on manipulation. When there is organic obstruction reversed peristalsis can be seen, and it is not possible to force out any meal out of the stomach. The pylonic canal is thin from the beginning and the duodenal cap is never completely filled.

In cases where a spasmodic condition cannot be explained by any intrinsic disease of the stomach or the duodenum, the extrinsic cause should be investigated into by a more thorough examination

in other directions—organs that would require such investigation are commonly the appendix and the gall-bladder.

Rate of Emptying.—As has already been mentioned hyperperistalsis and rapid evacuation speak very strongly of duodenal ulcer and cholecystitis. When associated with a persistent deformity of the duodenal bulb, X-Ray diagnosis of duodenal ulcer can be made with certainty. Hyperperistalsis is also marked in cases of cancers of the stomach.

Delayed emptying is suggestive of an atonic stomach with or without obstruction, spasmodic conditions, organic narrowing or kinking of the pylonus or the first part of duodenum. In pyloric obstruction hyperperistalsis with little evacuation, and reversed peristalsis is generally seen. The diagnosis is established if this is associated with six hours' retention.

Six hours' retention does not, however, always speak of organic obstruction. In spasmodic conditions and some reflex disturbances, the initial evacuation may be very rapid but a residue may remain behind at the end of six hours. If the initial peristalsis is feeble and there is a residue of more than one-fourth of the meal, the inferences are more in favour of nervous disturbances, gastroptosis or extreme atony following organic obstruction. Twenty-four hours retention always speaks of organic obstruction.

Carcinoma of the Stomach.

Malignant growths of the stomach under certain conditions are capable of diagnosis by X-rays. When the growth is of some size and projects into the lumen of the stomach, it gives rise to a persistent filling defect. When associated with immobility and absence of contraction in the part of the stomach it is always pathognomic or a carcinoma. The rate of emptying is quicker unless there is an organic obstruction.

As cancer is often a big ulcer so the X-Ray evidences of an ulcer and cancer (ulcerative type) are identical except that there may be the suggestion of a biggish ulcer (1 in. diameter or more cancer—Carmann).

No opinion of a malignant growth should be given without a thorough examination of clinical details and its corroboration with radiological inferences.

Gastroptosis.

Radiological evidences of a true gastroptosis consist in abnormal removal of both the cardiac and pyloric portions of the stomach together with the hook like stomach tube between them (lesser curvature) from their normal points of fixation (the diaphragm and the liver). The mobility and the rate of emptying may or may not bear any relation to a true gastroptosis, though usually they show a greater or lesser degree of atony.

Other diseases of the stomach and duodenum e.g., diverticulitis of the duodenum or pailloma at the ampulla of Vater and such other rare conditions. Their diagnosis may rather be classified as " Romances of Radiological Diagnosis," so I refrain from entering into their details.

It is apparent from all that has been said that more evidences are obtained from a patient, methodical and careful screen examination. Indirect evidences are always present and help considerably in the diagnosis, whether direct proofs are obtained or not. Direct evidences will undoubtedly be more welcome, but, as we have already stated, these cannot always be obtained.

These are, therefore, the value of radiology in the diagnosis of the more important diseases of the stomach and duodenum. They are agreed upon by all radiologists. There yet remain behind various problems in gastro-duodenal diagnosis where uniformity of opinion has not been arrived at and there is a wide field for research on those lines. Recent developments make the science and art of radiology highly technical. It is not possible for a surgeon to know all the technical details and enter into any discussion on them. I leave that aspect for your consideration. As a clinician I am interested in some questions where clinical diagnosis is very difficult to arrive at. The questions of reflex pains and neuroses trouble us as well as the radiologist and a discussion in that direction may be useful.

The question as to how long a gastric or a duodenal ulcer should be treated medically and the prospects of medical and surgical treatment has engaged the best brains. What we are concerned with at the present moment is as to how far the

radiologist can tell us definitely if an ulcer has healed.

While teaching students on skiagrams of the stomach, on several occasions, I have found the greater curvature at a much lower level than what is taught to be its normal limit. None of these stomachs had any disease in them. I bring this point to your notice to ascertain if your experience is in any way similar to that of mine.

I have always felt that in all these meetings we often lay more importance on the aspect of scientific research. The spirit is highly commendable and no discovery of any value could have been possible without it. At the same time I like to point out that we should occasionally try to review our works in the light of the present day knowledge and find out how far we have been able to follow and materialise the teachings of the masters into practice. The present, to my mind, is a fit occasion to do so. We are all assembled here to-day with a certain amount of practical experience behind us. We should take advantage of the occasion and discuss our own failings, so that when we leave the place we may feel that we have gained some useful knowledge whereby we shall be able to direct our subsequent works with more ability and satisfaction.

You, as radiologists, know your own failings and incapacities more than any one else. I would limit my observations to some questions that have led me to think that the present nature of radiological work can be improved upon.

From all that has been said it is evident that a screen examination report of the radiologist is more valuable to the clinician than the skiagrams. Inferences deduced from the skiagrams without a detailed, systematic, intelligent and patient screen examination report in different positions and angles do not make the clinician any the wiser. Even if his interpretations are correct the mental equation of the radiologist cannot be imprinted on the skiagrams. The report should, therefore, be such that its study would at once convey to the mind of the clinician an idea of the anatomy and function of the organs under examination. Sometimes I find that skiagrams are sent out with an arrow here and an arrow there and with such scanty reports that it is not possible for anybody to arrive at any logical conclusion. I think more importance should be given to the reports than to the skiagrams and the method of sending reports should be standardized. With the development of modern technique and appliances, we expect to see better skiagrams.

Ulcer Crater or Niche. I do not know in what percentage of cases an ulcer crater or niche can be seen. Lord Moynihan says that in his series of cases the radiologist could demonstrate an ulcer crater in quite one-third of them. These figures vary much with those of Dr. Carmann who could demonstrate it 220 times in 1658 cases, i.e., roughly speaking in one-eighth of them. I have seen an ulcer crater in a very small percentage of cases. Probably in the group of cases, I had the opportunity of studying the skiagrams, ulcers were not deep enough to show a crater. Every one of you had the opportunity to study a large number of skiagrams and you are the fit persons to give exact figures. One point that has struck me is the extreme rarity of lateral or oblique skiagrams that are taken here. Is it possible that the low percentage of cases in which I could see a crater was due to this defect in the technique?

Duodenal Bulb:—Speaking generally about the diagnosis I must admit that the radiological diagnosis has been correct in a fairly large number of cases. I am talking from a surgeon's point of view, i.e., where the Radiognosis was corroborated on the table. Except in cases of pyloric or duodenal ulcers, i.e., with ulcers in the body of the stomach, attempts to localise the ulcer are very seldom made and often the only report that we get is " Radiological evidences suggestive of a gastric ulcer." I think more attention should be paid to the localisation of the ulcer when they occur in the body of the stomach.

Before I finish I would like to ask you if an X-Ray diagnosis of " Superficial erosion of the duodenal mucosa " can be made. Erosions of the mucous membrane of the duodenum are a definite pathological condition. Its surgical significance is great in so far that even in the absence of any symptom of an active ulcer, serious and repeated hæmorrhages may threaten the life of an individual. I have tried in my own way and failed to find much reference regarding the condition except that as far back as 1914 Cole made an assertion that the diagnosis of superficial erosions of the

duodenal mucosa was impossible to be made radiologically. I shall be glad if any one of you could instruct me more on the point.

In conclusion I thank you Mr. President, ladies and gentlemen for the patient hearing you have given me. I would request you to take my remarks with a spirit of cordiality that is due to any scientific criticism. Far from any attempt to belittle your services to the cause of suffering humanity, I take this opportunity to express the deep gratitude that the medical profession and humanity in general owe you for your great endeavours. Emboldened by the constant favours received from you, it is nothing unusual for us, clinicians to be indulgent in our demands.*

*Paper read at the Scientific Section of the VIIIth All-India Medical Conference held in Calcutta, March, 1932.

Some Unusual Effects of Bone Trauma

CAPT. M. MUKHERJEE, M.B., D.M.R.E., Calcutta.

I apologise for the imposing title of the paper which has been put down under my name, for the effects, to which I am going to draw your attention, are not at all unusual, though fortunately not very frequent. Further, this communication does not presume to impart any new knowledge. It is on the contrary an invitation to this august assembly of learned brethren to enlighten an humble seeker after knowledge.

All of us are familiar with the effects of physical trauma upon bones and joints, in general practice, namely the fractures and dislocations. These constitute such an overwhelming majority that often other effects—the small minority—are lost sight of, and neglected until their existence is forced upon our attention by the increasing severity and inexplicably unyielding character of the signs and symptoms. This group comprises the infective and neoplastic changes in the bones and also a number of diseases named after the authors who first described them, but all of which appear to belong to the same category, that is osteo-chondritis.

The Osteo-chondritis class includes Perthes, Kohler's, Kummel's, Kienbock's & Schlatter's diseases. In all of them a history of injury is very frequently present. Though affecting different parts of the skeleton, the radiological appearances of all of them are essentially similar consisting of flattening or widening, of the bone, contusion of the trabeculæ, and increased density. Interesting features about all of them are:—

(1) Tendency towards healing without any, or in spite of all treatments.

(2) Liability to confusion with tuberculosis of bone.

Coming to the infective changes: I dare say it has been the experience of all of us to get a case conforming more or less to the following type:

There is complaint of pain of moderate intensity—nothing more than a dull ache, possibly worse on cold nights, in one of the extremities. This has been going on for weeks or even months. The mode of onset is forgotten. The patient seeks advice because the usual gamut of medicaments—liniments, fomentations, & salicylates—have failed. Pointed enquiry elicits the information that the pain started from a mild injury, a knock, or a fall, or a sprain, but lest the surgeon goes wrong in his diagnosis, he is forthwith warned by the patient that there is "rheumatism in the family." The limb, on examination, does not reveal anything more illuminating either. There is a little swelling, a slight tenderness, and possibly a brawny discoloration, of the part. There may or may not have been any fever during the course of the disease. And yet a radiological examination of the limb shows an underlying chronic osteomyelitis as evidenced by a laying down of new bone in parallel layers from the periosteum, condensation of the cortical layer, enlargement with uneven density of the medullary cavity with a sequestrum, or two lying in this area, giving to the whole bone an worm-eaten appearance.

Incidentally, the value of radiological examination is demonstrated by cases like these, since

the condition could hardly be divined with any measure of certainty from the meagre history, or definitely linked with the antecedent trivial injury as cause and effect by any other method of examination.

Unfortunately, I do not possess any films or reductions from illustrative cases but I believe many of my friends will bear me out from their experience of similar cases.

In taking up the next effect, that is the supervention of malignant disease as a result of injury, I cannot do better than relate the histories of three cases, and show you reduced positive films of two of these.

CASE I.

A young Hindu male was referred to me by a colleague, for electrical treatment of arthritis of his right knee, of 2 months' duration, resulting from a fall on wet ground by being pushed from behind whilst standing in a crowd witnessing a game of football. The affected knee looked red and swollen. There was some tenderness and limitation of movement. General health perfect; W. R. & Gonococcal infection—negative. I insisted on an X-Ray examination before undertaking any treatment to exclude neoplasm, or extensive bony damage. The plate, now unavailable, showed Myeloid sarcoma involving the head of the tibia. The case was operated on and the radiological report was confirmed by the pathologist.

CASE II.

A young Mahomedan female was referred to me by another colleague with the following note: "For favour of X-Ray examination to find out how far electrical treatment would be likely to do any good to this case of Chronic Arthritis of the left knee, with ankylosis of 1½ years' duration." The patient was a weak, emaciated and unmarried girl of 14, who had knocked her left knee against the edge of the seat of a chair about 1½ years ago. That injury was followed by a short period of acute pain and swelling of the knee, with little or no fever. After fomentations and applications of herbal remedies the pain nearly disappeared, and the swelling subsided to some extent but she could not open out the knee from the flexed position in which it had been kept during the period of acute pain. At the time of the examination the knee was swollen, somewhat tender, and ankylosed in a flexed position. The radiogram (Film 1) showed a slow-growing malignant tumour in the head of the tibia, probably a myeloid. The patient refused operation. Subsequent history is unknown.

CASE III.

A young Hindu female of about 16 was referred to me by another friend as a case of osteo-myelitis of the lower part of the right leg, for a radiogram. She had a fall in coming downstairs, which had hurt her leg, 3 years ago. The injury was followed by pain and swelling. With rest the pain disappeared, but the swelling remained, in spite of liniments and fomentations. After remaining quiescent for 1 year, it started increasing in size very gradually, accompanied by no other discomfort except an increasing heaviness in the leg. At the time of the examination, the lower part of the leg was dusky, œdematous, slightly tender on pressure, and looking as if afflicted with filariasis. The radiograms (Films II. a & b) showed a myeloid tumour of the lower end of tibia; the fibula was also affected—an expansion of the bone and distinct trabeculations. Subsequent history is unknown.

Now the salient features about these cases are:—

(1) The very trivial degree of the trauma.

(2) Onset of a swelling immediately after the injury, which persisted more or less up to the time of the radiological examination.

(3) The change in the nature of the swelling from the simple reactionary to the more serious semi-malignant type. At least in one case the change was detected within 2 months of the injury.

(4) Liability of mistaken diagnosis till probably too late.

A consideration of these features seems to establish a causal, (and not merely casual) relationship between bone trauma and bone malignancy in some cases, however small the number might be.

The degree of severity of injury determines the nature of the reaction. The very severe ones cause a solution of continuity followed by plastic inflammation and repair, whereas the lesser grades of trauma are responsible for initiating an inflammation which might end in a full-fledged osteomyelitis, or in supervention of malignant disease.

The last word has not yet been pronounced on the causation of tumours. The exact sequence of events leading from a simple reactionary inflammation, or reparatory hyperplasia to the onset of malignancy is impossible to demonstrate in our routine practice of medicine, but it may be feasible to trace out all the links in the chain by animal experiments, with the help of the Roentgen rays and the microscope.

The solution of the problem has not only a great scientific interest but may have far-reaching practical importance in our art of alleviation of human suffering.*

*Paper read at the Scientific Section of the VIII All-India Medical Conference held in Calcutta, March, 1932.

Roentgenological Study of Valsalva's and Mueller's Experiments

By DHIRENDRA NATH BANERJEE, M.B. (Cal.), M.D. (Berlin),
Radiologist—Chittaranjan Hospital & X-Ray Institute, Calcutta.

This is an attempt at study of the effects of respiration both normal and forced, with or without obstruction as revealed by the X-Rays. This is not the place to study physiology of respiration. Only the more important physiological facts shall be enumerated here for reference. Intrathoracic pressure due mainly to the elastic pull of the lungs, varies from −5 to −7 mm. of Hg. at the end of normal expiration to −30 mm. of Hg. at the end of deep inspiration. The deeper the inspiration the more the lungs are put upon stretch and hence leads to more negative pressure.

The pressure at the end of expiration = −4·5 mm. Hg.
The pressure at the end of inspiration = −7·5 mm. Hg.
That is a variation of 3 mm. of Hg.

On the other hand the pressure within the lungs—the intrapulmonic pressure—varies to a more considerable extent during different phases of respiration. The intrapulmonic pressure—

During quiet inspiration is −9 or −10 mm. of water.
During normal expiration is 7 or 8 mm. of water.
During forced inspiration is −30 to −80 mm. of Hg.
During forced expiration is 60 to 100 mm. of Hg. (Howell).

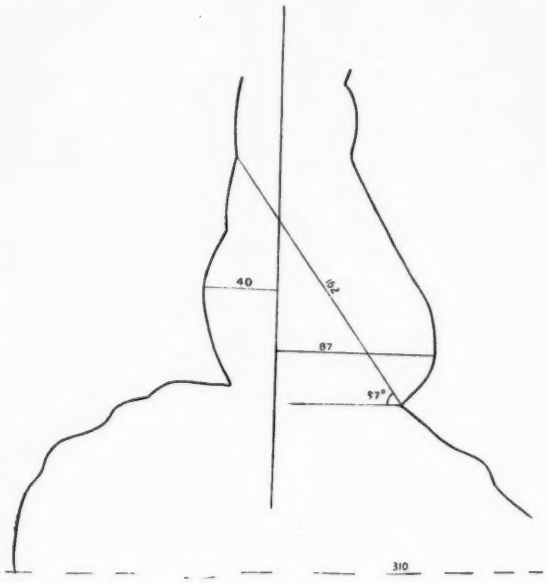
Howell is of opinion that "if one maintains a strong expiration while keeping the glottis closed, the rise of intrapulmonic and intrathoracic pressure may be sufficient to clamp off the large veins emptying into the right auricle."

The Effect of Intrathoracic Pressure Over the Vascular System.

The pressure outside the heart and large thoracic vessels is correspondingly diminished during inspiration to the same extent and produces its main effect of distension upon the veins leading to proportionately more rapid flow of blood into the thorax and thus into the right heart. The output of the right heart is thus increased resulting in the increased output of pulmonary circuit, left heart and into the aorta. The aortic pressure thus rises. But roentgenologically the aorta is not markedly influenced by the pressure changes on account of the thickness of the wall.

The reverse takes place during expiration resulting in the fall of aortic pressure. The

arterial pressure thus rises with inspiration and falls with expiration. This rise and fall takes



VALSALVA'S EXPERIMENT

FILM NO. 1

RA—40
LV—87 LD—162
TD—127 XY—310
HT. Lung Coefficient—2·44
RA : RV—1 : 2·2
Angle of inclination of heart—57°

place a little later than the inspiration or the expiration, because the blood flow takes some time to pass through the lungs.

THE EFFECT OF FORCED AND UNUSUAL RESPIRATION.

After forced expiration with glottis open, a still small negative intrathoracic pressure remains. On the other hand, the intrathoracic as well as intrapulmonary pressure rise after forced expiration with glottis closed as is usually done during defecation, parturition, etc.

After forced inspiration with glottis open or closed an increased negative pressure is produced.

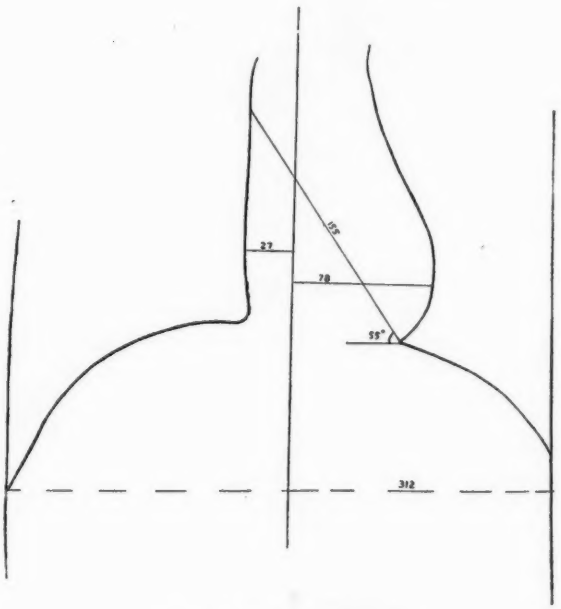
VALSALVA'S EXPERIMENT.

By this experiment the subject is asked to take the maximum forced inspiration; he is then asked to close the glottis as well as the mouth and the nostrils and then to attempt forced expiration as during defecation.

In our present study, one film has been taken at the end of the maximum forced inspiration and another after the maximum attempt to breathe out with glottis closed. The result is shown on the skiagram and specially by the measurements of the cardiac shadow.

The sequence of events runs thus—

"Intrathoracic and intraabdominal pressure rise so greatly that the outlets of the veins of the limbs, head, neck into the thorax are blocked. At first the blood in the abdominal veins is drawn



VALSALVA'S EXPERIMENT.

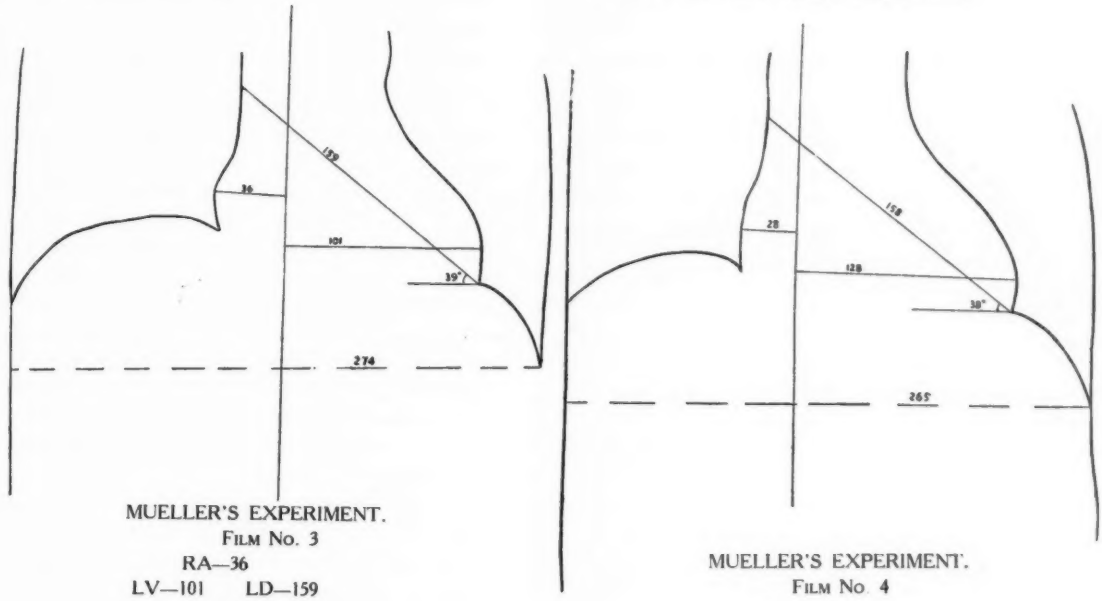
FILM NO. 2

RA—27
LV—78 LD—155
TD—105 XY—312
HT. Lung Coefficient—3
RA : LV—1 : 2·9
Angle of inclination of heart—55°

on into the right heart producing a slight rise of arterial pressure; but soon the lungs are emptied

of blood, the filling of the right heart opposed and the blood is dammed back into the peripheral veins. The arterial pressure begins then to fall." (Halliburton).

By this experiment the subject is asked to have the maximum forced expiration, then to close the glottis, nostrils and mouth and to make an effort to take forced inspiration.



MUELLER'S EXPERIMENT.
FILM NO. 3
RA—36
LV—101 LD—159
TD—137 XY—274
HT. Lung Coefficient—2·1
RA : LV—1 : 2·9
Angle of inclination of heart—39°

MUELLER'S EXPERIMENT.
FILM NO. 4
RA—28
LV—128 LD—158
TD—156 XY—265
HT. Lung Coefficient—1·7
RA : LV—1 : 4·6
Angle of inclination of heart—38°

Müeller's experiment is the reverse of Valsalva's experiment—

* * * * * *

From a study of these skiagrams we come to the following measurements :—

Film No.	R.A.	L.V.	= T.D.	L.D.	X.Y.	Ht. Lung Coefficient X.Y: T.D. (1·9-2·2) (normal)	R.A: L.V = 1:2 (normal)	Angle of inclination of heart. angle L.D.with horizontal (40° normal)
Valsalva's Experiment—								
1.	40	+ 87	= 127	162	310	2·44	1 : 2·2	57°
2.	27	+ 78	= 105	155	312	3	1 : 2·9	55°
Mueller's Experiment—								
3.	36	+ 101	= 137	159	274	2·1	1 : 2·9	39°
4.	28	+ 128	= 156	158	265	1·7	1 : 4·6	38°

I take this opportunity to express my best thanks to DR. G. C. MUKHERJEE for assisting me during the roentenological study and to MR. ACHAL LAHIRI, a student of the National Medical Institute, Calcutta, for offering himself for this experiment.*

*Paper read at the Scientific Section of the VIII All-India Medical Conference held in Calcutta, March, 1932.

Chronic Hypertrophy of the Prostate and its Treatment by Diathermy with the Physiotherapy

By A. RAKSHIT, B.SC., M.B.

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Patients generally on the wrong side of 50, come to us complaining of the frequency of micturition, especially nocturnal polyuria, difficulty in passing of urine, especially at the commencement of the act and general weakness of the system. We examined and found in most of them enlargement of the prostate gland. The enlargement was in some cases hard and in others it was soft. The softness was due to vascular engorgement—congestion of the prostatic veins. The examination was done by asking the patient to lie on his side and introducing the finger, besmeared with vaseline, per rectum. Another method of examination is by means of a catheter. The catheter is sterilised and passed on through the urethra until it meets with a resistance on the way, *i.e.*, just when it enters the neck of the bladder—the obstruction is caused by the hypertrophy of the gland.

The prostate is a form of glandular structure occupying a position between the bladder and the rectum. The hypertrophy of the glandular structure forms a benign mass named adenoma—Prostatic adenoma. When fibrous tissue supervenes the structure becomes hard and indurated and then it is called fibro-adenoma. It is a chestnut-shaped gland, encircles the first part of the urethra and by its enlargement it causes pressure on the urethra and gives obstruction to the passage of urine. The lumen of the urethra is narrowed and becomes chink-like. The length of the urethra is increased because by its enlargement it causes stretching and extension of the urethral canal—the enlargement is being directed backwards and upwards, the base is fixed. The gland insinuates between the sphincter and the internal meatus—thus causing intravesical enlargement where a sort of a pouch forms at the posterior part of the base of the bladder. The urine is collected there and not completely voided during the act of micturition and everytime the residual urine is accumulated. The collected urine undergoes putrefaction and causes septic contamination of the bladder—sooner or later cystitis develops. The residual urine by further and further accumulation becomes greater in quantity—the prostatic bar hinders the outflow and the bladder in consequence becomes gradually over-distended. There is complete retention of the urine with overflow incontinence. The secondary changes become evident from the bladder to the ureter and then to the kidney. The bladder first becomes thickened and hypertrophied due to increased expulsive efforts. The ureters become distended up due to interference with the act of micturition.

Kenneth Walker considers that the senile enlargement of the prostate is of the nature of a fibro-epithelial degeneration occurring during the process of involution of the male genital tract. The enlargement is progressive, leads to gradual increase in urinary obstruction and if not relieved in time death may occur from interference with the renal function.

Wilson and McGraith report the sequence of events in the enlargement of the prostate as follows:—

I stage—Initial hyperplasia of the parenchyma and the active secretion of the epithelial cells.

II stage—Retention of the secretion of the epithelial cells within the tubules and the alveoli of the parenchyma.

III stage—Degeneration of the parenchyma.

In actual cases we find the hypertrophy of the fibrous tissues which is more common than the hyperplasia of the muscular structure.

The average size of the prostate is—

Length from base to apex 34 m.m.

Transverse diameter 44 m.m.

Thickness 15 m.m.

Weight 16 grammes.

It generally consists of 4 lobes. There are two lateral lobes one is small anterior lobe and one is middle lobe interposed. The enlargement is generally noticed in the middle lobe which causes interference with the urinary function. The prostate is a more or less glandular mass pierced by the urethra along the whole length in the centre and by the two ejaculatory ducts on the sides. The enlargement causes pressure also on the ejaculatory ducts—there is a check to the flow of semen. Owing to the obstruction the semen is collected in the vesiculæ seminalis and there be comes distension of the seminal vesicles. The penis becomes irritated, priapism occurs due to congestion of the prostatic plexus of veins—the patient loses all sense of moral decency. The congestion of the prostate is much more increased by exposure to cold, by venereal excess, by cycling or horse-riding, by the intake of alcoholic excess, excess of highly spiced food and by prolonged retention of urine.

Theories of origin as at times attributed by the authors:—

1. Prostatic enlargement may be a family inheritance.

2. It is a condition analogous to fibroid tumour of the uterus.

3. The enlargement is a result of hyperæmia incidental to sexual excess.

4. It is a consequence of Gonorrhœa or chronic prostatitis.

5. It is due to arterio-sclerosis and occurs in patients suffering from gouty diathesis.

6. It is a compensatory atrophy to prevent the dilatation of the bladder.

The difficulties that are experienced by the patient are—

(*a*) Nocturnal frequency of urine, difficulty in the commencement of micturition—narrow stream of the flow of urine and tenesmus.

(*b*) Heavy feeling in the bladder, sense of weight in the perineum and no feeling of ease even after micturition. The residual urine which is formed in the prostatic pouch may be withdrawn by catheter even just after the act of micturition. Irritation of the bladder causes frequency of micturition in the beginning and later on distension and atony of the bladder in neglected cases associated with the dribbling of the urine and over-distension of the bladder. Due to overdistension the mucous wall of the bladder becomes thinned out and projects into the muscular fasciculi forming sort of diverticuli. The ureters, too, become dilated owing to backward pressure and gradually hydronephrosis of the kidney sets in. If the cause remains long-standing, septic infection follows and results in pyonephrosis and pyelonephritis.

The general health of the patient becomes run down and emaciated due to insomnia caused by frequent calls of micturition at night time and he suffers from neurasthenic troubles due to frequent absorption of toxic products in the blood.

Treatment.

The patient tried before long self-catheterisation and becoming tired out of doing so, he sought the help of our physiotherapy before undergoing any actual operative procedure. The processes for the treatment that were followed in our department are—

(*a*) Application of a Local Light Bath—the Light bath is given over the region of lower abdomen for 10 to 15 minutes. The duration of the time may be gradually increased owing to the tolerance of the patient. It causes local hyperæmia by the dilatation of the superficial vessels.

(*b*) Massage of the abdomen—Kneading movements and pressure movements are gradually followed. Movement begins from the right side of the abdomen, then upwards and downwards to the left side of the abdomen in a circular direction. This gives tone to the abdominal contents and congestion of the pelvis is much relieved.

(*c*) Enema—Simple hot water enema of 2 to 3 pints per rectum to flush out the colon and to relieve the intestinal stasis given daily.

(*d*) Sitz Bath—The patient is seated for 20 minutes in the hot Sitz Bath. The abdomen from below the umbilicus to the upper part of the thigh lies immersed in the running hot water, the foot is rested on a foot-stool and he rubs the lower abdomen gently while sitting in the bath. This is followed by pouring of a cold shower over the head for 3 minutes. This is followed for at least a fortnight.

(*e*) Diathermy—By two unequal metal electrodes, heat is given directly to the prostatic area. One belt metal electrode is wound round the waist and another rectal electrode introduced to the point of the prostate. The heat is given for 20 minutes and the application of Diathermy given on every alternate day. At least 15 exposures with gradual increase of the current are necessary.

(*f*) Patient is advised to guard himself from exposure to cold—for cold increases the congestion of the affected prostate and the trouble becomes more enhanced. The patient is kept warm in bed and never allowed to wet himself with moistened clothes. The causes of congestion are obviated—such as cycling, riding, etc.

(*g*) Diet—The patient is kept on milk and fruit diet only. The milk he is advised to take in a raw state and to sip while taking without swallowing altogether. Totally 1½ to 2 seers of milk may be consumed daily and quantity can be increased according to the liking of the patient. Fruits—Acid, sweetened and dry fruits are prescribed. Acid fruits such as Lemons, Oranges, Pineapples, Pomegranetes, Tomatoes are allowed. Sweet fruits—Papaya, Bael, Mangoes, Apples, Plantains, Sugar-canes, Plums can be given. Dry fruits—Such as Dates, Raisins, Apricots, Figs, Prunes.

(*h*) Alkalies were given to diminish the irritability of the bladder and purgatives to diminish the pelvic congestion.

*Paper read at the Scientific Section of the VIII All-India Medical Conference held in Calcutta, March, 1932.

Contrast and its Control in the Art of Radiography

By EMILE E. GYSS, A.B., E.M., Chicago, Bombay.

In the art of radiography, we find endlessly discussed the four most important factors: contrast, detail, density and distortion. This paper, however, will be limited to a description of contrast as applied to the radiographic film and the various devices and electrical variations which serve to obtain this vitally necessary quality.

In the field of light and optics, we realize that in order to see any object whatever, there must be a difference in colour, or shade of colour between the object and the background against which the object is placed. If we should draw a white line on a white background, obviously the white line would be seen very indistinctly, if at all. Now, should the white line be made grey, its visibility becomes greater, and when the line is made perfectly black, it becomes clearly and distinctly visible. This conception is so simple and elementary that it seems almost incongruous in this article, but since this conception of contrast is of such tremendous importance in radiography, it is necessary always to bear this clearly in mind.

Contrast in radiography then may be defined as the maximum difference in intensity between the whitest whites and the blackest blacks. In a radiograph we are normally interested in blacks and whites, and we would like to have nothing but black and white on the films, if this were possible. Unfortunately, particularly with soft tissue work, intermediate shades of grey are obtained. Obviously then, we always strive to get as great a degree of difference in intensity between the light and dark areas of the film, as possible. Now the question may be logically asked: "Suppose you do get contrast on a film; what purpose does that serve?"

Contrast serves only to make visible the most essential necessity which must appear on a film: Detail is the whole essence of the film, for by means of the sharp, clear, distinct delineations of all areas and contours on the film, the abnormalities may be diagnosed from what may actually be seen clearly outlined. If this detail is blurred and indistinct, very serious omissions or errors may be made in the diagnosis. Assuming then, that all the necessary equipment and accessories for obtaining good detail have been used, we may not be able, due to poor contrast, to see the detail. Under these conditions, then, the

radiograph would be classed as non-diagnostic and unacceptable.

Contrast, much more than other radiographic factors, *i.e.*, density, detail and distortion, depends on a more complicated and less easily grasped series of causes. We shall here make a short survey of the conditions which produce poor contrast, and the electrical and mechanical factors by which we can eliminate these causes.

Let us compare an X-Ray beam from the focal spot of a tube with a strong stream of water. When this stream impinges upon an object of sufficient density, a spray of smaller streams is obtained, shooting out in all directions from the point of impact.

When an X-Ray beam strikes an object, a spray of secondary radiation is set up, shooting out likewise, in every direction. With X-Rays, however, the production of these secondary rays takes place not only on the surface, as it is the case of the stream of water, but from points inside of the body, as well. Thus, the amount of secondary radiation may be enormous, and it is these rays that find their way to the portions of the film which would otherwise be white, causing a fogging of the whites into greys and dirty whites. This is shown in Fig. 1.

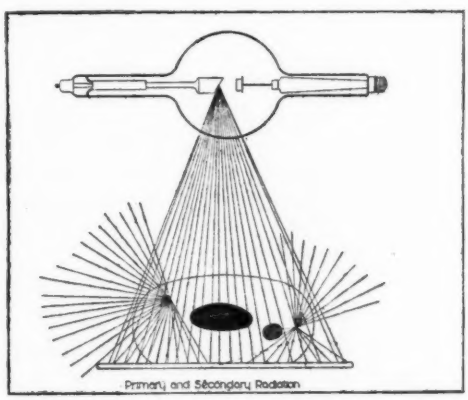

FIG. 1.

The suggestion at this time may enter the reader's mind, that if we could eliminate the secondary radiation completely, then we would obtain clearer, brighter whites and hence develop the most brilliant contrast possible. That is exactly what we try to do.

The first electrical factor which we can control to diminish the secondary ray reaching the film, is the Kv. P. or voltage. It has been physically determined that the lower the kilovoltage the less the secondary and *vice versa*, so that it is always possible to improve contrast with lower kilovoltage. Thus, one of the causes of bright, contrasty films may be clearly stated. Use as low a Kv. P. as possible, still maintaining perfect detail and the requisite density. We shall give some illustrative problems later.

All the accessories devised to improve contrast may be classified into three groups:—

1. Those using as their basis the variation in Kv.P.
2. Those using as their basis the mechanical limitation or absorption of the secondary.
3. Those using chemical methods.

In the first case we have already discussed the lowering of the Kv. P. as a factor. The other accessory utilizing the principle of a lower Kv. P. is the intensifying screen.

This screen is simply a cardboard whose surface is coated uniformly with exceedingly small crystals of calcium tungstate. This chemical possesses the property of becoming fluorescent under the influence of X-Rays, just as a screen in fluorographic work. The light emitted by these crystals has a very marked effect on the highly sensitive film, so we can use a lower voltage and still get the proper radiographic detail and density. By using these lower voltages, we have diminished the secondary radiation and obtained much better contrast.

The mechanical means by which the secondary radiation may be diminished, are the cone and the Bucky diaphragm.

The cone, because of its shape and its composition, allows the rays to impinge on a much smaller area than when the cone is not used. As a consequence, the secondary rays produced come from a smaller surface and are lessened in quantity. Consequently, this diminished amount of scattered radiation will produce a less intense fogging of the whites, resulting in better contrast.

Much has been said of the Potter-Bucky Diaphragm, and very justifiably so. Because of its construction, it sifts out or absorbs about 80

to 90% of the secondary radiation allowing only 10 to 20% to reach the film. This is accomplished by means of a series of wooden strips having fine lead sheets between them. All rays travelling in other directions except substantially parallel to the rays from the focal spot of the tube itself, are absorbed. However, due to the construction of the diaphragm not all the secondary can be absorbed. But so little does get through the filter, that with it most brilliant films of the heavy parts such as pelvises and spines are possible. In tissue differentiation work, such as kidney and gall-bladder radiography, the necessity of contrast is so important that unless the most perfected accessories are used, areas of different density are likely to be so poorly differentiated that the diagnosis may be made with great uncertainty or not at all. See Fig. 2.

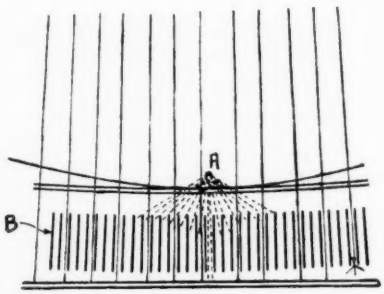

FIG. 2.
Showing interception of scattered rays by fine grid.

The chemical accessory referred to above is the developer. If the film be under-developed or over-developed, the contrast will be poorer. By under-development the blacks will be grey, making white and grey instead of white and black; by over-development the whites will be grey on black instead of white on black. Thus the dark-room may be a source of lack of contrast and care should be taken that the proper temperature time values be used in development.

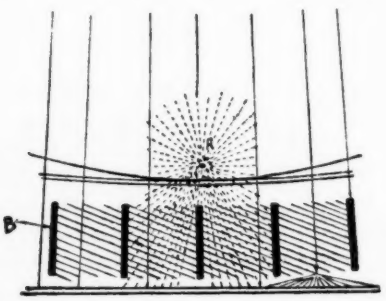

FIG. 3.
Showing how scattered rays will reach the plate if the grid is coarse.

This is a resume, in a very brief way, of the causes producing undesirable contrast and the methods used to improve this always desirable quality.

The applications, particularly of the factors in group 1, having to do with a lower Kv. P. will be used here in a few examples:

Suppose the following technique on a cross-arm type mechanical rectified or valve rectified X-Ray machine gives an excellent routine radiograph of the pelvis, *with Bucky Diaphragm.*

Kv. P.	*Dist.*	*M.A.*	*Time.*
88	25″	10	4 Seconds.

Now if we lower the Kv. P. and keep the other factors constant, obviously we will get a film which will be too light in radiographic density. To remedy this condition we will increase either the milliamperage or the time, and if possible we prefer to vary the time, so that we can still use 10 M.A. and obtain the extreme fineness of detail possible with the 10 M.A. radiator tube. If we vary the Kv. P. a certain amount, how much need we vary the time and still obtain the same radiographic density?

From very extensive research work done under ideal circumstances, it has been found that the radiographic density will remain substantially constant if the following rules are followed:

If the time of routine technique is doubled, reduce the Kv. P. by 10.

If the time is multiplied by 5, reduce the Kv. P. by 18.

If the time is multiplied by 10, reduce the Kv. P. by 28.

Referring to the routine technique of the pelvis as above noted,

Kv. P.	*Dist.*	*M.A.*	*Time.*
88	25″	10	4 Seconds.

If we multiply the time by 2, then we reduce the Kv. P. by 10, so the technique becomes:

Kv. P.	*Dist.*	*M.A.*	*Time.*
78	25″	10	8 Seconds.

If we multiply the time of routine technique by 5, reduce Kv. P. by 18, so we have:

Kv. P.	*Dist.*	*M.A.*	*Time.*
70	25″	10	20 Seconds.

Thus by increasing the time, where the part can be immobilized, we may use a lower Kv. P. and obtain the much more brilliant contrast of the improved radiograph. We should always remember, however, that the time of exposure must be kept within the limits of safety, so that for instance, a routine 15 second exposure multiplied by 10, might probably cross the danger line. The following rule has been formulated, and has been found to hold in all radiographic work, when using film alone, or with screens or with screens and the Bucky diaphragm.

The lower the Kv. P. and longer the time or the higher the milliamperage, always and invariably will the contrast be better.

So let us give to contrast the important place which it should have as a requisite essential in the production of an excellent diagnostic film, for by means of it we can help place upon the film all of the detailed information which the radiologist is seeking in order to make as safe and as exact a diagnosis of the pathology as possible. The work of the diagnostician is difficult enough in itself, and the more information it is possible to put on the film, the more certain and exact will be the conclusions deduced.

Cardiospasm

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In the course of the last six years of my X-Ray practice at Patna I have had opportunity of examining three cases who came complaining of difficulty and retrosternal pain when swallowing, combined with regurgitation of food sometime later, in whom Roentgen examination established the diagnosis of Cardiospasm or Achalasia of the Esophagus. All three patients were males and their age varied between 20 and 35. The symptoms with which all of them presented for examination could be summarised as follows:—

1. Intermittent attacks of choking sensation and pain under the sternum while swallowing food for some years before applying for treatment. One patient aged 35 had these attacks off and on for about 10 years.

2. Regurgitation of food soon after taking it of recent origin; every meal was not thrown out.

3. Drinking a large quantity of water with food would sometime allow the meal to pass through. This symptom was present in only one case.

One patient volunteered the statement that on several occasions at night he was awakened by regurgitation of large quantities of liquid into his mouth in which bits of food particles taken by him 24—36 hours previously were present. This unpleasant experience made him learn the technique of emptying his esophagus by a voluntary effort before going to bed.

All these patients were poorly nourished, shewed, no signs of cachexia and had weight and strength below normal. Their appetite was quite good.

X-ray examination of these cases with barium meal shewed the following picture:—

The opaque substance, irrespective of its consistency, would run down the gullet normally until it reached the cardiac end where it was held up. Further swallowing of the meal caused dilatation of esophageal lumen and accumulation of the opaque substance in the dilated gullet which would stand out in bold relief on the fluoroscopic screen as a gourd or cucumber like shadow. In one case the dilatation was about 10 cms. on the screen and was so great that the margins of the esophagus over-lapped the lung field on the right side. The meal would either remain above the cardia for hours or be thrown out quickly. The characteristic point about these cases was the funnel shaped lower end of the barium column with regular unbroken outline and the symmetrical appearance of the two borders of its termination. No peristaltic wave was seen in the dilated opaque shadow of any of

these cases, as all of them were cases of long standing.

Dilatation by bougies was tried in the first case of the series by the surgeon who had charge of the case but with no result. Antispasmodics were administered after treatment with the bougie and immediately before a second X-ray examination, the fluoroscopic appearance was however, unaltered. This patient was advised a retrograde dilatation of the cardiac end of the esophagus after gastrostomy but he left hospital without receiving any further treatment. The second patient was treated with HURST'S mercury filled tube (24 gauge) with very satisfactory result; he learnt the art of passing the tube himself and has derived great benefit by its intermittent use. The third patient objected to treatment by these tubes and left disappointed as we could prescribe no medicine to give him relief.

Three cases in six years would not suggest that the disease is a common one; but there are authorities who opine that it is a fairly common disease. Its recognition has been more frequent since the introduction of routine X-ray examination in all cases complaining of dysphagia. The three patients who came under my observation were all males, residents of rural areas and belonging to the labouring classes. American authors however think that the disease is more common in young women of neurotic temperament while FRASER believes that it is a disease common with spasms and atonies in the early years of the twenties up to middle life.

The interest that attaches to this disease lies in the multitude of speculations that have arisen in connection with its etiology. Some authors believe that the condition is a true spasm but HURST has adduced strong evidence in favour of the view that the disease is essentially an absence of relaxation or achalasia of the cardiac sphincter which causes the obstruction. It was MIKULICZ who first suggested in 1882 that the obstruction was due to spasm of the cardia *i.e.*, the point where the esophagus joins the stomach and it is from his time that the condition has been commonly known as cardiospasm. HURST found by using a rubber tube filled with mercury and introducing it into the esophagus of one of these cases, that it dropped so easily into the stomach that it was impossible to detect any resistance when the cardia was reached. With its end in the stomach it could be moved freely up and down and finally be withdrawn without the slightest drag upon it, such as a grip caused by spasm would produce. These observations proved that no spasm was present. From anatomical evidence supplied by specimens in pathological museums HURST observed that the last inch of the esophagus, the part within the abodmen corresponding with that portion which recent radiological and histological observations have endowed with a definite sphincteric action was not dilated nor was there any hypertrophy of its muscular coat. He, therefore, concluded that the functional obstruction was due to the fact that the peristaltic waves which passed down the esophagus in swallowing were not followed, as they should be, by relaxation of the cardiac sphincter. It should be noted that ROLLESTON had suggested as long ago as 1895 that the dilatation of the esophagus in these cases might be due to a " failure in the co-ordinating mechanism by which the cardiac sphincter is relaxed in swallowing." FRASER, quoting several authorities, state that the esophagus and the cardiac portion of the stomach are supplied by the parasympathetic portion of the involuntary nervous system, both motor and inhibitory impulses being conveyed along this channel. According to him certain disorders of this involuntary nervous system manifesting at the sphincteric areas of hollow viscera cause a persistence of the contraction effects producing achalasia. It is a sort of breakdown in the neuro-muscular alimentary arrangements which manifests itself by a delay in the acquisition of the power of inhibition by certain segments of the alimentary canal. There are *some authorities* who believe that degenerative changes in Auerbach's plexus which in some cases has shewn infiltration with small round cells, give rise to incoordination of the myotonic reflex in the region involved and that in consequence the distant longitudinal layer of muscles is not reached by stimuli. As regards *symptomatology* PLUMER's classification of the disease into three stages furnishes a connecting link between the symptoms and the anatomico-pathological changes taking place at the sphincteric area. According to him the patient complains, during

the first stage, of intermittent attacks of substernal pain and difficulty in swallowing with occasional choking sensation. These attacks recur at irregular intervals. The patient feels that the food is arrested somewhere behind his breast bone before entering the stomach. During the second stage, *i.e.*, when the esophagus hypertrophies and tries to force food down by vigorous persistalsis, antiperistalsis sometime prevails and the food is thrown out just as swallowed without nausea. These attacks of food-regurgitation become gradually more frequent until patient seldom takes a meal without this trouble. It is at this time that some patients discover that drinking a large quantity of water with food aided by energetic contraction of the pharyngeal muscles helps them in forcing the food down into the stomach. In the third stage when hypertrophy gives way to dilatation producing a hugely dilated thin walled esophagus the meal is not regurgitated immediately after it has been taken but sometime later.

The *diagnosis* of the disease when it is fully established is quite easy, if the patient is examined fluoroscopically during administration of an opaque meal. The picture of the dilated esophagus with a blunt or regularly conical obstruction at or near the cardia and the smooth symmetrical termination of the shadow usually at the hiatus esophagus—to quote CARMAN's language—is unmistakable. If the condition is of recent origin —we see only slight dilatation of the esophagus above the obstruction and vigorous peristaltic waves are noted in an attempt to overcome this obstruction. Antiperistalsis is also frequently seen. If the condition is of long standing the whole of the esophagus above the point of stenosis presents a greatly dilated appearance and in some cases the hypertrophied mucous membrane can be seen in the retro-cardiac space without the aid of any Barium meal. In these cases, however, peristaltic waves are rarely seen —because the muscles are atrophied. The chief difficulty arises if these patients present themselves for examination at the early stage of the disease. At this stage the condition has to be differentiated from carcinoma and benign organic stricture. The common situation of carcinoma of the esophagus being below the level of the bifurcation of the trachea and very frequently affecting the cardiac portion—it is a matter of very great importance that a definite and decisive diagnosis should be arrived at as a result of the X-ray examination. Carcinoma of the lower esophagus very seldom remains localised to the subdiaphragmatic portion; it practically always extends above the diaphragmatic opening. The opaque shadow of carcinoma shews a filling defect and the lumen of the tube at the affected spot shews stenosis and tortuosity, its width varying irregularly and its direction being of a wavy serpentine character. If the shadow conforms to this picture the diagnosis of carcinoma is not difficult, but early cases of carcinoma in which obstruction is caused by reflex esophageal spasm produce so littile departure from the shadow of cardiospasm that much ingenuity is required in these cases to arrive at the correct diagnosis. The smooth symmetrical termination of the shadow at the point of obstruction is not always associated with cardiospasm nor does irregularity in the outline of the shadow always connote carcinoma. The clinical history must always be taken into account and weighed carefully in the balance with the informations gathered from a full roentgen examination. By a full roentgen examination I mean both fluoroscopic and radiographic examination in the upright, horizontal and Trendelenburg positions. The observations with regard to the barium shadow on which most reliance is to be placed are the presence or absence of a filling defect, presence or absence of dilatation of the tube above the point of stenosis, and whether vigorous peristalsis is visible above the obstruction or not. It should be remembered that in carcinoma the wall of the gullet in the immediate neighbourhood of the growth is infiltrated with malignant and inflammatory cells and is therefore incapable of dilatation to any extent and cannot produce vigorous peristalsis in consequence of the same pathological change in the muscles. I would like to add here that in spite of the most careful examination and interpretation of results some mistakes in diagnosis have been made and the early stage of obstructive carcinoma has been labelled as cardiospasm to the great detriment of the patient. I have made such a mistake myself and would warn my colleagues to be very circumspect when dealing with such cases. It is certainly desirable that in these doubtful cases the patient should be

referred to a throat surgeon for direct examination by an esophagoscope. The differential diagnosis of the condition from post-traumatic benign stricture affecting the lower esophagus will be easy from a consideration of the history of the case and from observation of some irregularity in the barium shadow as distinct from the symmetrical cone of termination of cardiospasm.

The treatment of these cases had been greatly simplified since the introduction by HURST of the use of mercury filled rubber tubes which are introduced into the esophagus and relieve the obstruction by hydrostatic pressure. Dilatation by bougies through an esophagoscope under direct vision is practised in some clinics, in others the patient is given a pellet attached to a piece of long silk which he swallows. The pellet gets stuck at the point of stenosis and then an ordinary bougie is passed along the silk to overcome the obstruction. All kinds of plastic operations have been performed in the past for the relief of the condition such as esophagoplication, gastro-esophagostomy, retrogade dilatation after gastrostomy, cardioplasty, etc.; but HURST's method of treating the condition has supplanted all others. He uses a mercury weighed rubber tube of 24 gauge which is allowed to slide down the gullet where it is allowed to remain for some time until it finds its way into the stomach by hydrostatic pressure. It is then pulled up and down. HURST says that "its regular use almost always gives great relief and is often followed by permanent recovery. The patient learns to pass it himself, at first keeping it in position for 10 minutes before each meal, then gradually for shorter periods and less frequently, until finally he passes it only once a day, once a week, or only at long intervals whenever he feels that there is some slight return of obstruction." One case which I saw demonstrated before the Edinburgh Medico-Chiururgical Society in 1925 had put on 2 stones in weight in 2 months after commencement of the treatment by HURST's bougies.*

*Paper read at the Scientific Section of the VIII All-India Medical Conference held in Calcutta, March, 1932.

Roentgenological Diagnosis of Pulmonary Tuberculosis in Children

By K. C. CHAUDHURI, M.B., CALCUTTA.

Roentgenological diagnosis of pulmonary tuberculosis in children presents considerable amount of difficulties mainly for two reasons: *first*, the thorax in children has its own peculiarities and special features, and *secondly*, roentgenology as such reveals nothing about the specificity or otherwise of the shadows seen in skiagram or on the screen more so in children, because the shadows of the chest organs in children are not so highly differentiated as in adults. For the proper understanding and interpretation, it is therefore necessary to have detailed knowledge on these two points.

In still-born infants the form of the lungs is bell-shaped, and it is only after the new-born has breathed that a tendency to change into the usual barrel shape of adults is noticed. In infants the upper aperture forms a right and the epigastrium an obtuse angle in contradistinction to that in adults where they are acute. The position of the diaphragm is also higher. The bronchii are half as long as at puberty and the level of bifurcation of bronchii moves from the place of IV vertebra at birth down to that of the VI at puberty. In foetal life the differentiation of the different chest organs is impossible as they all cast a uniformly dense shadow. Only when the infant has breathed, it becomes possible but offers difficulties, because at first only the peripheral and upper parts become filled with air and the paravertebral part casts a shadow, which may be mistaken for a pathological change. The hilus shadow is completely covered over by that of the mediastinum, and the presence of thymus should also not be forgotten. Extra-thoracic organs interfere more

in children than in adults because as already stated the intensity of the shadows of the different chest organs is not so highly developed. Lastly, the relative position of the infant and the Roentgen tube plays a more important role in children than in adults. It has been shown for example (DUKEN) that the lateral rotation of the head in infants casts a shadow in the upper zone of the lung field easily leading to a fallacious conclusion.

Coming to the second point it needs to be emphasised again that roentgenology forms only one link in the many methods of diagnosis, and therefore, must always be interpreted in relation to clinical and other findings particularly so in children as the pathological changes in them are sometimes not so well developed as to produce recognisable effects in the skiagrams or on the flouroscopic screen.

Having discussed so far the two points of difficulties, we would proceed to detail with some of the important features of tuberculosis in infancy and childhood. The most characteristic change is the so-called "primary focus," originally described by GHON and later named after him. As to genesis of GHON'S focus, genous it has been assumed that bronchoGhon route is the commonest mode of infection and the most frequent site is the easily accessible portion of the bronchial tree, namely, (GHON) the right upper lobe. Opinion, however, differs on this point. It is seldom multiple and shows signs of healing rarely before the third year. Visibility of the primary focus on roentgenological examinations depends on its age. It is difficult to see in the early stages and can be diagnosed definitely only when calcification has taken place. Within a short time of its appearance it involves the regional lymph-glands, which, however, are sometimes more easily recognisable than the focus itself. They are seen as sharply defined, enlarged shadow in the skiagrams. These two pathological changes form together what is known as "Primary complex." In the roentgenological examination care should be taken not only to have skiagrams but also to do minute flouroscopy because primary focus is sometimes missed in the skiagram due to overlapping by the shadows of ribs and other organs. Differentiation between focus and such glands is easy on the flouroscopic screen—focus moving with the movements of respiration, while the glands remain stationary. It is interesting to note in this connection that there is almost always a collateral or peri-focal infiltration round a primary focus, which disappears completely in course of time. For this reason, this infiltration has been assumed to be non-specific in nature. It is known as "Epi-tuberculosis."

It sometimes happens that the course of primary infection has had no such fortunate culmination. It does not show any sign of healing, on the contrary of aggravation. In such instances, hæmatogenous infection takes place and leads to miliary tuberculosis with all its severe sequelæ. In others, it goes on to tertiary stage, showing signs of cavity formation. It is, however, seldom seen before tenth year of life. Both these changes are easily recognised in the skiagrams.

The recognition of pleuritic changes particularly the different forms of pleurisy, dry serofibrinous, hæmorrhagic, etc., is not easy. Dry pleurisy shows nothing in the skiagrams but a diagnosis is perhaps possible by noticing the limitation of breathing movement on the fluoroscopic screen. The nature of the exudate in the exudative type of pleurisy cannot be roentgenologically diagnosed. Exudative pleurisy is seen as a triangular shadow having the base on the diaphragm and the apex upwards. Exudation covers the lungs as a "mantle" and forms medially a crescent-shaped margin from the apex to the base, its size depending on the amount of exudation. In early stages exudation is noticed only in the phrenico-costal angle. Interlober pleurisy is best elicited by having the patient in lordotic position. It has been established by experiments that a linear shadow of interlobar pleurisy in vertical position of the patient is changed into a triangular, broad one in the lordotic position.

In this paper there had not been any attempt to say anything, which is not already known but to emphasise some points, which must be remembered for the correct understanding and proper interpretation of the skiagrams.*

*Paper read at the Scientific Section of the VIII All-India Medical Conference held in Calcutta, March, 1932.

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Editorial Comments

In presenting this issue of the Journal which might be termed the radiological number incorporating as it does the papers on the subject read before the Eighth All-India Medical Conference, it is in the fitness of things that we should consider very briefly some of the aspects of the Medical Radiologist's profession.

Nearly four decades have elapsed since the discovery of the "unknown" light, and although the time may appear long, the progress during the period has been exceptionally rapid, and the achievements stupendous. In the very early days, this science was limited to the detection of fractures and foreign bodies, but before long attempts were made to utilise this new ray in the diagnosis of diseases of the different systems of the body. This was rendered possible partly through the almost phenomenal rate at which improvements in the apparatus and accessories began to take place, and to-day investigation of X-rays is a routine adjunct in the diagnostic procedure of almost every disease, which the human flesh is liable to catch.

Unfortunately, however, the perfection of the mechanical side of the science has not been an unadulterated blessing. This is due to an erroneous idea in the minds of the general public and of the medical practitioners that the machine is more important than the man: production of a good radiogram has all along been considered as the *sine qua non* of the roentgenologist, forgetting that it is the correct interpretation of the radiogram, or of the fluoroscopic observations which is the more important, nay, the only essential qualification, of the radiologist.

In the early days of the gas tubes, and coils or static machines, it required a great degree of skill acquired only through prolonged and diligent practice of the technics, to produce a useful radiogram. Hence, the few physicians practising radiology were regarded as possessing a special skill—"specialists"—to whom their colleagues would refer their cases. But now-a-days many "press button" types of apparatus are available with which it is extremely easy for any physician of average intelligence to take a good radiogram. This has somewhat undermined the roentgenologist's position amongst his medical compeers, imbued as they have been with the wrong idea that a roentgenologist's speciality lies in taking good "pictures." That this has been so and still is, is evident from the fact that very frequently cases are referred to him not for an examination and opinion, but for "X-ray pictures" only. This practice on the part of the referring physicians is not the result of any ulterior motive to raise themselves higher in the estimation of the patients, but is due to a failure to realise the true functions of a radiologist.

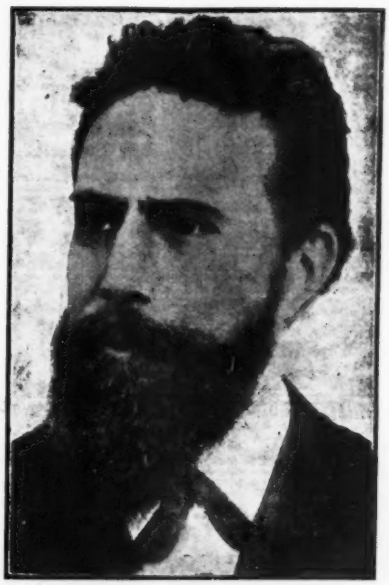
A radiologist is nothing but a consulting physician. He employs a highly specialised method of examination by X-rays, and is competent to interpret the results of such examination from his general knowledge of medicine and surgery, and his special knowledge of X-ray physics, geometry of shadow projections, and Roentgen anatomy and physiology of the living.

In the field of Radiation therapy an analogous condition prevails. A patient is often referred to the Radiologist for treatment by X-rays or Radium, sometimes with instructions even as to dosage. Our knowledge of the effects of radiation upon normal and pathological tissues, is far from complete; therefore, the greatest caution is necessary in selecting cases for treatment. The radiologist will be failing in his duties if he subjects a patient to radiation treatment of any form, simply because the patient has been referred to him for the purpose.

William Conrad Roentgen

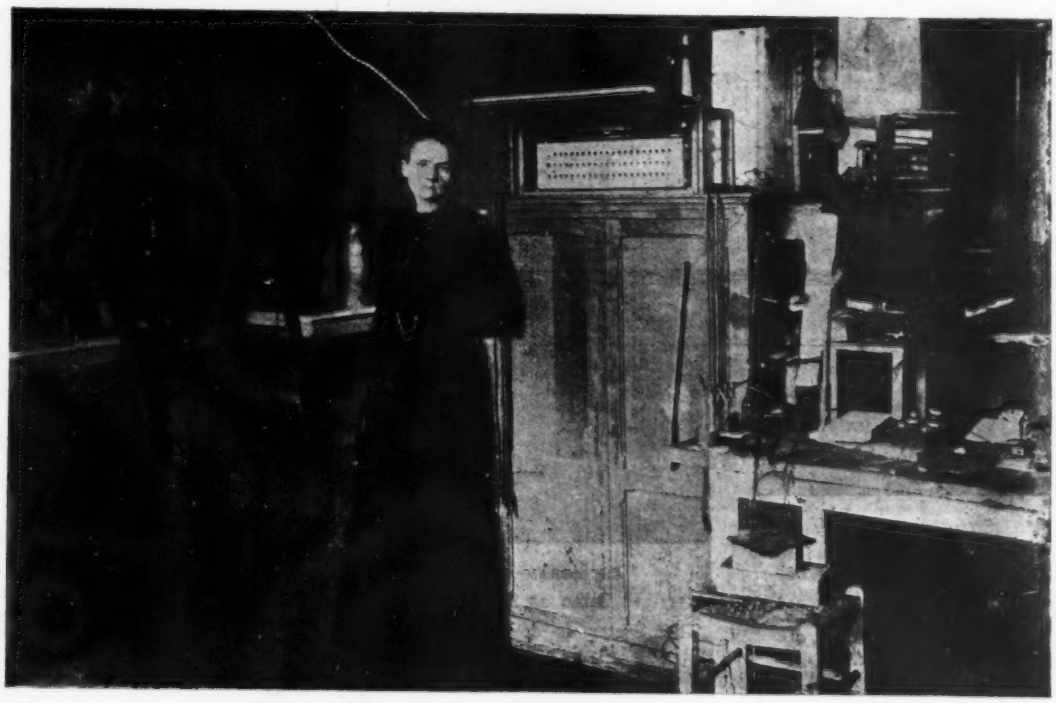
William Conrad Roentgen was born on March 27, 1845, in Lennep, a small town in Germany. His father F. C. Roentgen was a manufacturer and cloth merchant, and his mother, Charlotte Constance Frowein came from a Dutch family.

W. C. Roentgen was the only child and grew up in a very happy family surroundings. In the beginning of his school life he was not a brilliant student. Unfortunately he was found guilty by the authorities on a certain occasion and expelled from the school. This was a severe shock to an ambitious boy Roentgen had been. However, he entered a mechanical school at Apeldoorn and later appeared in the Matriculation Examination but was unsuccessful. In 1865, he entered the Technical High School at Zurich. Due to the teachings of Profs. Clausius and Kundt, physicists of the school, he developed a real love for the study of natural science. His subsequent career is as brilliant as it is well-known to the world at large.



WILLIAM CONRAD ROENTGEN.

In June, 1869, he graduated as Doctor of Philosophy and remained as assistant to his teacher, Prof. Kundt. Two years later he followed Kundt to Wuerzburg when the former had accepted the offer of the chair of Physics. While in Wuerzburg Roentgen married on July, 1872, Bertha Ludwig of Zurich with whom he lived very happily for nearly fifty years. The Roentgens had no children but had adapted and raised a young niece of Mrs. Roentgen. In 1874, Roentgen became Privat dozent of Physics at Strassburg University. In 1876, Roentgen ac-



MADAME CURIE IN HER LABORATORY. By Courtesy of " Suchikitsha "

cepted the Associate Professorship of Theoretical Physics. Alone and also in collaboration with his teacher he published a series of excellent treatise on the merit of which he was offered the chair of Physics at Giessen University and stayed there for almost ten years. In 1888 Roentgen was called to the University of Wuerzburg and succeeded the brilliant Kohlrausch. It was in Wuerzburg that he made the discovery of the X-Rays in November 1895. In April 1900, he accepted the call of the University of Munich. In 1901, he was awarded the first Nobel Prize. When the world war broke out times changed and Roentgen, in his loyalty to his fatherland which he loved so dearly, gave his gold and some of his valuable honorary medals to the Government. His beloved wife died in October 1919, after a long illness and Roentgen was a very lonely and unhappy man. He died in Munich on February 20, 1923, of Carcinoma of the intestine at the age of 78 years, and his ashes were laid to rest in Giessen. His name and his work will live for ever.

Case Note

A Case of Renal Fistula Diagnosed by X-Rays.

By DHIRENDRA NATH BANERJEE, M.B. (Cal.), M.D. (Berlin).
Radiologist, Chittaranjan Hospital and X-Ray Institute, Calcutta.

In September, 1930, the patient noticed a hard swelling about two inches in diameter in the left renal region. In a week it became soft and was operated on. The wound healed up leaving a sinus (October 1930). In January, 1931, the sinus was again opened and was dressed regularly

SKIAGRAM 1.
(21-7-31) Iodipin is seen to fill up the whole of the pelvis of the left kidney and the left ureter. The shadow of a stone is seen below the shadow of the upper calyx.

SKIAGRAM 2.
(21-7-31) Same as Skiagram 1. The ureter is found nearly empty.

SKIAGRAM 3.
(27-12-31) Showing the shadow of the stone in the left kidney. Remains of a few particles of iodipin still visualised.

but with little improvement. He came down to Calcutta and was operated on for the third time in a hospital where he was detained for 24 days. The pus which was all along draining through the sinus ceased to come out though the sinus still existed. Within two days after his discharge from the hospital pus began to come out profusely.

SKIAGRAM 4.
(27-12-31) Showing the shadow of the pelvis of the kidney and ureter. Another stone is seen in the urinary bladder.

The first skiagram was taken on 21-7-31, *i.e.* 10 months after the first appearance of the swelling. This was taken after introduction of 40% iodipin through the sinus which showed typical filling up of the pelvis of the kidney and the ureter up to the bladder. The film taken 10 minutes after the introduction of iodipin showed evacuation of the ureter to a considerable extent. A shadow resembling a stone in the kidney was also observed.

The discharge from the sinus was examined which showed streptococcus, but no acid fast bacilli. (B. coli?). No urinous odour was ever observed in the discharge.

The patient did not have any regular treatment after the X-ray examination was done. He turned up again on December 27, 1931, for another X-ray examination, the sinus persisting as before. Skiagram without iodipin showed the presence of a stone in the kidney and another in the urinary bladder. Introduction of iodipin through the sinus showed a typical pyelography.*

*Paper read at the Scientific Section of the VIII All-India Medical Conference held in Calcutta, March, 1932.

Medical News and Notes

(Items of news and notes of general interest to the profession for incorporation in this section from the members of the profession will be greatly appreciated—EDITOR)

Fact Stranger than Fiction. A case of infantile child-birth is reported from the Victoria Zenana Hospital, Delhi. It is stated that a girl whose age, from the Municipal Records, is seven years having been born in 1925, has given birth to a baby.

Her history shows that she has never menstruated. Medical examination reveals a permanent incisura about to erupt behind her temporary one. The result of X-ray examination regarding her centres of ossification for further proof of age is being awaited.

She was delivered of a full term baby by cæsarian section.

U. P. Medical Council Election. The electors and others concerned will be glad to learn that Dr. Indra Narain Saxena of Fatehgarh has been declared elected to the U. P. Medical Council, defeating his rival, Doctor Lakhraj Singh Rai Sahib, P. M. S. of Hatheras, by an overwhelming majority.

* * * * *

Money for Bombay Hospitals. It is understood that the Government will shortly issue orders in regard to the funds raised by the Western India Turf Club at a special race meeting in Bombay during the past racing season on behalf of the hospitals of the Presidency. The money will be made available first to restore the

medical grants to the figure given by the Government before the emergency cut and then to make up the cut in other ways such as restoring beds which have been closed in many hospitals.

Since the cut was first put into operation, it has been very largely made up by a drop in the price of medicines and general commodities used for diet. Much of the cut in the expenditure on diet, too, has been recovered, as in the case of the Sassoon Hospital, from the patients who have been asked to pay a fee to cover the cost of their food in all cases where it was known that they could afford to do so.

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Bombay Medical Department. It is announced in the Bombay Government Gazette issue that the Government of Bombay (Transferred Department) has constituted two new provincial services to be designated the Bombay Medical Service, Class I, and the Bombay Medical Service, Class II. The status of the existing members of the Indian Medical Service, will be safeguarded under regulations, which will be issued hereafter and by rule 27 of the Civil Services (Classification, Control and Appeal) rules.

It is open to the local Government under the Bombay Civil Services, Rule 51 to grant the first appointment of the service, advance increments according to age and qualifications to a direct recruit, who is not above the prescribed age and is exceptionally qualified in respect of academic or professional attainments or administrative experience.

* * * * *

Afghanistan's New Move. The Ministry of Trade of the Afghan Government has sanctioned a sum of two lakhs of rupees for opening a new hospital at Kabul which will be equipped with the latest modern disease fighting appliances. It is proposed later to turn the hospital into a Medical College.

King Nadir Shah has issued a firman entrusting a number of Government buildings and public gardens at Kabul to the Ministry of Education to be used for purposes of education. It is also contemplated to establish a University at Kabul.

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Indian States and Medical Council. In course of his presidential address at the Fourth Mysore Medical Conference held recently Dr. S. Subbarao, Senior Surgeon of the Mysore Government and president of the Mysore Medical Association announced that the Mysore L. M. P. Diploma holders had been recognised by the Medical Councils of Madras, Bombay and Calcutta and Mysore medical graduates have secured recognition from Bombay and Calcutta and attempts are being made to get recognition from Madras also.

Referring to the constitution of General Medical Council for British India he said:

"So far as the All-India Medical Council is concerned, Indian States at present can find no place in it. Difficulties of a political nature arise against the procedure of including the states within the purview of the Indian Medical Act as British India would not be competent to legislate for Indian States. I hope, however, that degrees granted by the Mysore University will find a place in the schedule of qualifications recognised for registration."

Dealing with the question of sharp distinction that now obtains between the two existing class of medical men—graduates and licentiates—Dr. Subbarao said that the only way was to abolish the existing "caste system among doctors" by abolishing all medical schools or converting them into efficient colleges which would not only help the general public by giving them a better equipped and efficient body of medical men but also ensure the formation of a body of more self-satisfied doctors all of whom could aspire to the highest honours in the profession. This, he thought, would also make it possible for the institution of honorary surgeons in hospitals and thus free them from the officialdom at present prevailing.

* * * * *

Civil Surgeon to pay Damages. A division bench of the Allahabad High Court awarded damages of Rs. 4,000 to Mr. Benaresidas Kankan, formerly a Munsiff at Thilhar, against Major Shyam Beharilal, Civil Surgeon.

The defendant was the Civil Surgeon of Shahjehanpur and gave some prescription for ear trouble to the Munsiff. The Munsiff used the prescription after a year. It caused acute sensation in his ear and considerable pain. It was found that the drum of his right ear was practically destroyed.

Their Lordships held that the Civil Surgeon had given a "novel and dangerous" mixture for a petty complaint, which was likely to cause harm to the ear unless applied after vigorous shaking about which the doctor failed to give any warning.

* * * * *

Egyptian Medical Mission to China. In reply to the League of Nations' appeal, the Egyptian Government recently sent a bacteriological mission to China in order to combat, with the other nations, epidemics which were rampant in that country after the great floods. This mission was composed of a bacteriologist and two assistants, as well as a travelling laboratory equipped with anti-

choleraic vaccine and anti-small-pox vaccine sufficient for 400,000 persons and for 500,000 persons respectively.

The mission left Egypt on December 7, 1931, and arrived at Shanghai on January 4, 1932. Immediately on their arrival the doctors began their work, after having interviewed the local Chinese sanitary authorities, who greatly appreciated the help sent by the Egyptian Government and expressed their gratitude to H. M. King Fuad. The residence of the mission was established at the Hygienic Laboratory at Shanghai and researches were made on the choleraic disease which had made its appearance at Shanghai. The researches were very successful.

The mission also helped to superintend the sanitary state of the town and visited the different hospitals where they were consulted on some rare diseases which had made their appearance. They also made an examination of the waters of the Hwangho river.

The work of the mission was found to be so useful that the President of the International Mission and Delegate of the League of Nations expressed their desire that the mission should remain for a further few months. Unfortunately, the Chino-Japanese hostilities extended to Shanghai and Dr. Hong-Lui, President of the Chinese Commission for Hygiene, asked the President of the Egyptian mission to return to Egypt. But the mission journeyed to Hong-Kong and continued their work until the Egyptian Government recalled them after having consulted the League of Nations. The mission arrived in Egypt on March 20, 1932, after having made Egypt famous in these far off countries for the sanitary and scientific services which she had rendered.

* * * * *

B. M. A.'s Decision on Cheap Specialist Advice. By a vote of 45 to 22, medical specialists themselves approved the principle of charging one guinea instead of five guineas from working people for advice, at a meeting called by the B. M. A. The scheme which originated with the Hospital Saving Association is sponsored by the B. M. A. and will apply only to the Metropolitan area at present, but it will give a lead to the other cities.

Many of the subscribers to the Hospital Saving Association had expressed a desire to obtain specialist advice not in a hospital, but at the consultant's porfessional address for a reasonable fee.

The Hospital Saving Association has proposed to set up its own list of consultants, but had been advised by the British Medical Association that the circulation of a list prepared by a lay body would probably bring on the consultants in it the censure of the General Medical Council.

* * * * *

The Congress International de la Lithiase Biliare. Under the patronage of the leading clinicians and investigators of France, an important series of symposia dealing with ailments (particularly calculi) of the liver and biliary tract has been arranged at Vichy, France, September 19-22. Representative authorities of Europe, North and South America and Asia will take part.

All phases of the subject chosen will receive attention. The sections upon roentgenology, experimental investigation and therapy offer unusual progress. The leading surgeons of Europe will present the latest in operation technique.

The official programme may be secured by addressing Frank Smithies, M.D., President of the Congress for the United States, 920, North Michigan Avenue, Chicago Ill.

* * * * *

Medical Service by Radio. Dr. F. S. Parney, a member of the Canadian Department of Pensions and National Health, has what is perhaps the most unique medical practice in the world. He never sees his patients who are 1,500 or 2,000 miles distant; he diagnoses their ills by radio and prescribes his remedies through the same agency. The wireless operators who man the Department of Marine's seven radio stations in the Canadian Aretic are his agents of communication.

This medical service by radio is but three years old. Before its inauguration the Eskimo natives in the North, the few traders and trappers and officials, trusted to luck and the occasional first-aid kit if they were sick or injured. When the Marine Department's chain of short-wave receiving and transmitting radio stations was established, the operators began asking Headquarters in Ottawa for advice in such cases, and out of this informal beginning has grown a definite and extremely useful service.

To each radio post Dr. Parney has distributed supplies of standard drugs and copies of the British Board of Trade medical manual carried on ships without medical officers. With these to guide them the radio operators are able to treat many minor cases. If there is doubt or difficulty, however, they wireless Dr. Parney full symptoms and he sends back instructions. In his office are scores of case histories, many of them with 40 or 50 messages tracing the progress of disease or injury, recording the treatment of expectant mothers, children's ailments, boils and infected teeth, and practically the whole range of human physical suffering.

Out of the ordinary, even in this extraordinary practice was the case of the captain of a Norwegian whaler in the Aretic seas who wirelessed to shore asking directions for the treatment of a sailor injured when a heavy sea washed him into the scuppers. The shore station relayed the message to Ottawa, and until the sailor was on the way to recovery daily reports and instructions followed this route over land and Northern ocean.

Association Notes

Central Council

Proceedings of the XIX Meeting of the Central Council held on the 28th April, 1932.

Members present—

Dr. B. C. Roy (Chairman), Dr. Harinath Ghosh, Rai Bahadur, Dr. H. Ghosh, Dr. J. N. Basu, Dr. K. S. Ray, Dr. S. C. Sen Gupta, Dr. Sundari Mohan Das, Dr. Rajat Chandra Sen.

1. Proceedings of the last meeting held on the 27th and 28th December, 1931, were read and confirmed.

2. Accounts up to 15-4-32 were placed before the meeting.

3. The following names suggested by the different branches and the members for election as office-bearers for the year 1932-33 were placed before the meeting:—

Hony. Secretaries—

Dr. D. D. Sathaye (Bombay), Dr. A. N. Ghosh (Calcutta), Dr. K. S. Ray (Calcutta), Dr. S. N. Kaul (Lahore), Capt. P. B. Mukherjee (Patna).

Hony. Treasurer—

Dr. J. N. Maitra (Calcutta), Dr. A. N. Ghosh (Calcutta), Dr. Rajat Chandra Sen (Calcutta).

Editor of the Journal—

Sir Nilratan Sircar, Kt.

General Organisers—

Col. Bhola Nauth (Lahore), Major M. G. Naidu (Hyderabad), Dr. A. N. Ghosh (Calcutta), Dr. Da Silva (Jubbulpore).

Resolved that the following office-bearers be elected for the year 1932-33:—

Hony. Secretaries—

Dr. D. D. Sathaye (Bombay), Capt. P. B. Mukherjee (Patna), Dr. S. N. Kaul (Lahore), Dr. K. S. Ray (Calcutta).

Hony. Treasurer—

Dr. Rajat Chandra Sen (Calcutta).

Editor of the Journal—

Sir Nilratan Sircar, Kt.

General Organisers—

Col. Bhola Nauth (Lahore), Major M. G. Naidu (Hyderabad), Dr. Aghore Nath Ghosh (Calcutta), and Dr. Da Silva (Jubbulpore).

The following names were suggested for the Vice-Presidentship:—

Major M. G. Naidu (Hyderabad), Dr. Sundari Mohan Das (Calcutta), Col. Bakhle (Lahore), Col. N. S. Sodhi (Lahore), Dr. Rochiram Amesur (Karachi), Khan Bahadur Dr. E. S. Bharucha (Poona), Dr. U. Rama Rao (Madras), Capt. H. F. Manekshaw (Punjab), Col. Bhola Nauth (Punjab), Dr. M. A. Ansari (Delhi), Capt. P. B. Mukherji (Patna), Dr. G. V. Deshmukh (Bombay), Dr. B. C. Roy (Calcutta).

Resolved that the following gentlemen be appointed Vice-Presidents for the year 1932-33:—

Dr. U. Rama Rao (Madras), Dr. Sundari Mohan Das (Calcutta), Khan Bahadur Dr. E. S. Bharucha (Poona).

With regard to the method of election of Vice-Presidents in future, after some discussion it was resolved that the matter be postponed till the next meeting.

Resolved that the election of the following gentlemen by the branches to the Central Council for the year 1932-33, which have been so far received from the branches be recorded:—

Dr. C. P. Bhatt (Karachi), Dr. V. L. Nulkar (Jalgoan), Dr. Da Silva (Jubbulpore), Dr. N. B. Khare (Nagpur), Capt. H. F. Manekshaw (Amritsar), Dr. Niranjan Prasad (Bareilly),

Bengal Branch—

Sir Col. H. Gidney, Kt., Dr. N. N. Basu, Dr. S. C. Sen Gupta, Dr. A. C. Ukil, Dr. Harinath Ghosh (Rai Bahadur).

Additional Members from Bengal Branch—

Dr. J. N. Bose, Dr. H. Ghosh, Dr. Aghore Nath Ghosh, Dr. Anil Kumar Chakrabarty, Dr. Krishna Chandra Chakravertty.

4. Resolved that the formation of the Working Committee for the year 1932-33 be postponed.

5. *Election of Editorial Board and its powers and duties.*

Resolved that the matter be postponed till the next meeting.

6. The Secretary reported that branches have since been opened at Karachi, Nagpur, Hyderabad (Deccan) and also at Jubbulpore which was formerly an affiliated body. Birbhum Medical Association (Bengal) was also affiliated. The Secretary further reported that negotiations are going on to start branches at Delhi, Cawnpore, Lucknow, Allahabad, Berar, Yeotmal and several other places.

7. *Change of rules, if any.*

The Secretary placed before the meeting the following suggestion made by the Jalgoan Branch:—

"Doctors should be allowed to become members of the Indian Medical Association either in January or in July, completing their year in

December or in June. They should get the copies of the Indian Medical Association journal from their year of beginning."

Resolved that a sub-committee consisting of the following members be requested to go through the rules and recirculate them with their recommendations:—

Dr. S. C. Sen Gupta, Dr. A. C. Ukil, Dr. K. S. Ray.

8. With reference to the suggestions made by Capt. Manekshaw at the last annual general meeting which were referred to the Central Council, resolved that the opinion received from the different branches be considered by the sub-committee composed of Dr. S. C. Sen Gupta, Dr. A. C. Ukil, Dr. K. S. Ray and re-circulated to the members of the Central Council with the recommendations of the sub-committee.

Discussions on the Indian Medical Council Bill

Under the auspices of the Indian Medical Association a meeting of the medical men of Calcutta was held on Sunday the 24th July to discuss the Indian Medical Council Bill. Many prominent members of the medical profession attended. A few members of the Legislative Assembly, in particular Sir Henry Gidney were present by special invitation. The speeches of the various members are reported below.

Dr. K. S. Ray in opening the proceedings said he had great pleasure in requesting Sir Hasan Suhrawardy, Vice-Chancellor and Dean of the Medical Faculty University of Calcutta, to take the Chair on this occasion. The meeting had been organized by the Indian Medical Association, but it was really a meeting of the medical profession of Calcutta and they had invited all the medical men of the city, whether they were members of the Indian Medical Association or not, to participate in this evening's deliberations regarding the All-India Medical Council Bill, which was at the time a momentous issue before the medical profession in India. He hoped that with such an eminent son of India as Sir Hasan Suhrawardy in the Chair, the meeting would be a great success.

Sir Hasan Suhrawardy (Chanrman) then addressed the meeting as follows:—Gentlemen and brothers of the profession: As Dr. Ray has mentioned, I am here this afternoon in my capacity as a member of the profession to which all of us have the honour to belong—not in any official or demi-official capacity. I consider it a very great honour that you have asked me to take the Chair, and asked me also to speak a few words on this most important Bill that is now before the Legislative Assembly. I almost tremble when I find that a distinguished member of my profession and a most prominent member of the Assembly who has made his force felt in that august body, Sir Henry Gidney, is here this evening. But his presence here, if anything, serves to emphasise the importance of the measure to which Dr. Ray has just referred. We all agree, I take it, on certain fundamental principles which underlie the introduction of the Indian Medical Council Bill. It places us in the first place under the discipline of our fellow members of the profession. Of course, that is a very good thing, none of us deny that. It gives us an opportunity of having an organisation of our own, the function of which would be, as we all know, the maintenance of a common standard of education and of examination all over India. India, our mother country, is a vast sub-continent; in the different provinces in India, we have different classes of people and different colleges with their own standards of education, and no one denies the need of the advantages which will accrue as a result of having some organisation which will help us to maintain one uniform standard of medical education for the whole of India. From my own experience as a medical officer on more than one State Railway operating through different provinces in India, I have found that neither the alumni of our different medical colleges, nor of the different medical schools, conform to one common standard. Therefore, it is a very great desideratum which ought to be met at the earliest opportunity. But at the same time, the introduction of this Bill has created a lot of misapprehension in the mind of the medical profession and one of the reasons is that there is not the same kind of trust and comradeship which ought to exist between members of the profession and members of the service—especially the service to which our distinguished visitor, Sir Henry Gidney, belongs. I do not know why it should be so. I, for one, count many personal friends amongst members of the Indian Medical Service and I dare say I am not the only one in the profession and amongst my colleagues here, who cherish the memory of the teachers in the Indian Medical Service who have done their best for the profession and for their pupils. But still, unfortunately, there is at present that feeling of distrust and suspicion. The question is, are the members of the Indian Medical Service trying to do their very best, as it is their duty to do, for the medical profession of India. Members of the Indian Medical Service—a great majority of them—come

from a different country. They come to our country, which offers them careers, offers them opportunities of doing research work and of gaining experience and making their name and fame in the profession. Is it not their duty, therefore, to do their level best to promote the best interests of the medical profession in India? If they do not, then I say that they are responsible for the bad feeling that exists. And if there be such amongst the members of the Indian Medical Service who do not see that the best interests of the profession and of the service should be knit together and reconciled—I do not wish to say hard word about any one—then, I say that they are responsible for much of the bad feeling, which unfortunately exists in many quarters to-day. Now that a large percentage of the posts in the Indian Medical Service are being Indianised, it is all the more reasonable to expect that members of the Service would work for the profession. (Cheers).

Gentlemen, by accident I belong to the Indian Medical Service; a second man to the Provincial Service; third man may belong to the independent profession. But we *all* belong to the noble art of healing (cheers). Therefore, we should all work together for the advancement and maintenance of this noble feeling of equality which our profession has laid down and which we have adopted as our creed. We have been going about teaching people how not to get sick. Well, our brother lawyer goes and teaches people to fight amongst themselves and live in troubled waters (laughter). But our brother of the medical profession goes and teaches them how not to get sick. We have got a very noble ideal. What is the All-India Council Bill going to do that we are all on our guard at the present moment? In the University of Calcutta, we have just finished the Committee work regarding this Bill, and the Committee's report will be shortly placed before the Senate. We have had the privilege of having the weighty counsel and advice of eminent men from the non-official body of medical practitioners, such as Sir Nilratan Sircar and Dr. B. C. Roy. We had the views of members of the Indian Medical Service on this Bill, like Col. Flannet, Col. Stewart and Col. Sandes—men who have spent most part of their lives in teaching medical students for licentiates. We have also elicited the opinions of such eminent members of the independent medical profession as Dr. U. N. Brahmachari and Dr. Das, and day after to-morrow we shall place the views of the Committee before the Faculty of Medicine, who, I dare say, would submit their point of view, which would go forward to the Assembly. Without giving away anything that has not yet received sanction, I may say that, generally speaking, we are all agreed on certain fundamental principles; that is to say, we all believe that this Medical Council is a good thing, it is a necessary thing and that its function of keeping up and maintaining a high and uniform standard is very good. We consider that it will ensure for those who accept registration such facilities as exemption from acting as jurors, powers of recovering fees, or eligibility for appearing as candidates for Government service. We also recognise and I personally recognise that there should be between the General Medical Council of the British Isles and ourselves a friendly understanding, because I feel that by having a friendly understanding with them, we shall be ensuring for our graduates certain facilities for post-graduate studies in that country and for obtaining diplomas and degrees there, with the minimum amount of expenditure of time and money. On the other hand, if we are not recognised, then our graduates will have to pass a preliminary examination in order that they might be put on their register and then they will have to pass further post-graduate examination. It has also this advantage in that it ensures eligibility to be considered as for the Indian Medical Service, for the Colonial Service and other services in countries where reciprocity obtains. What we feel is that friendship there must be, but friendship connotes equality. If I am your friend, you must treat me on a footing of equality; I cannot be inferior to you if I must be your friend, and that means equality. If members whose names are on the rolls of the G. M. C. of Great Britain can *ipso facto* become members whose names should be on the Indian Medical Council Register, then, as an act of friendship and equality, I feel, and my committee feels and I think the University will also feel, that we should demand that our members should also *ipso facto* be on their registers (cheers). If not, then the whole thing is one which we, as members of the medical profession, cannot possibly agree to, and I dare say that Sir Henry Gidney will lend his weighty support in the Assembly to see that this point of view is forcibly brought before the members of the Assembly. That is to say, if members, for instance, who are going, by reason of their being members of the Indian Medical Service or by reason of being members of some of the superior services, to be included in the Indian Register as a matter of course, then I say our members should also be included in the Register of the G. M. C. of Great Britain *ipso facto*. So far as standard is concerned, we are going to keep our standard as high as possible, so that people from all over the world can come here. Our doors are wide open, our standards are as good; our alumni will go and prove to the world what standard we exact from them. Whether they are good or bad, that is for the whole world to judge. Without any bias for the Calcutta University, I may say that the alumni of the Calcutta University would bear comparison with their compatriots in any other University in the

world. I, for myself, could not have been a very brilliant product of the Calcutta Medical College. I went to England and got my admission in the Rotunda Hospital, Dublin. That is the largest hospital in the Empire and one of the biggest in the world. I went there and gave them enough evidence of the training I had here in Calcutta, so much so that they made me an extra fellow. It is all very well for people to talk about midwifery training here not being of the standard required. Well, we have satisfied the test. We have produced men who have amongst their patients people who are not Indians. Why do they call them? They are undoubtedly products of this University. That is proof positive of what we can achieve.

Another matter about which I feel strongly is this: There may be diversity of opinion on the point, but still, from my own experience the opinion that I have formed about Licentiates is this. There again I would like to have the help of Sir Henry Gidney and I dare say his valued experience will support me. Now, what I have found is that amongst what we call the sub-assistant surgeon class, there are men whose knowledge of medicine, surgery and midwifery is as good as that of any product of any University. I remember in 1907 when I went out with the Amir of Afghanistan, these sub-assistant surgeons were not worth much in those days. That was 25 years ago. I can now clearly see that my colleagues to-day who are called sub-assistant surgeons have gone up more than 200 per cent. in their efficiency and standard of education (cheers). I feel that they are just as good as any L.R.C.P., the product of extra-mural institutions of British Isles. Therefore, what we in the University think is, " Very well, as there has been difference of opinion and since unfortunately people who have devoted a lot of time in teaching this very class of people, have thought otherwise, we bow to their superior wisdom and recommend that sub-assistant surgeons should be put in a schedule so that they might be on the rolls, if not on the same standard as alumni of the Calcutta University, but still they must be on rolls. If they are on the Provincial Council's registers then for the sake of uniformity, why should they not be on the All-India Register."

One other thing that we have considered in the University is whether we shall go forward and see that this work is accomplished. I do not know whether it is in the intention of the Government to get this Bill passed into a law during the forthcoming session of the Assembly. But we feel that in view of the fact that federal structures of all the provinces are now being considered and as we realise that at no distant future, provincial autonomy will be an accomplished fact, it is neither desirable nor expedient to have a measure like this passed in the Central Government, which will have to be changed in future years in order that it might fit in with the forthcoming federal constitution. I am a person who believes in getting a move on. I don't like things to go on hanging fire, but at the same time I realise that on certain occasions it is wisdom to stay one's hands. A good surgeon is he who does not chop off his patient's arms or legs in the exercise of his privilege, but applies his knife only with the object of saving something bigger, with due caution and judgment. We have thus learnt the great lesson of staying our hands. And if I am to voice the feeling of my colleagues who have worked for many months with me on this Bill, then I should say that perhaps the wisest thing is not to hurry through a measure of such momentous importance.

I think I have kept you too long and I would now like to ask some other friends of mine to speak. After that Sir Henry Gidney will tell us all about it because in him we have a gentleman who feels for us. He is a distinguished member of the profession and a prominent member of the Indian Legislative Assembly (applause).

Dr. K. S. Ray then addressed the meeting. He said:—Mr. Chairman, Ladies and Gentlemen, I should like to take this opportunity to ask Sir Henry Gidney a few questions arising out of this Bill, and I hope that Sir Henry Gidney will take up the cause of the Indian Medical Profession in the Assembly of which he is a distinguished member. In the first place, what we do not understand is why the Government should have gone back upon some of the provisions contained in the original Bill which was circulated for opinion. At the time when the Bill was circulated for opinion, the Government declared in unambiguous terms that the object of the Bill was to create a uniform minimum standard for the whole of India. We all agreed, as our President has pointed out that there should be a Medical Council for the whole of India which would decide as to what should be the standard. That was the avowed intention of the Government when the Bill was introduced in the Assembly in the form in which it was originally drafted. In other words, the provisions of the Bill followed closely the views expressed by the Conference held at Simla. It was made clear at the time that the object was to put our house in order, and that was a view to which no one could take exception. But now we find from the Bill, which has been introduced in the Assembly in amended form, that the original idea of maintaining one uniform standard for the whole of India has been given the go-by. The Conference that met at Simla, I may remind you, passed a resolution condemning the action of the British Medical Council in banning the Indian medical degrees. So, the preamble in the original

Bill more or less reflected the considered views expressed at the Simla Conference, but I now find that the preamble in the amended Bill has been changed altogether. It is now stated in the preamble that the Bill is intended for the registration of a minimum standard of higher medical qualifications in India. That is the main departure and I think that it is up to the Government to explain the reasons which have led them to make that departure of a fundamental character from the principle originally underlying the Bill to which the Government agreed and to which Sir Fazli Hussain agreed when he presided over that Conference. What is the reason for making this change in the preamble in the face of our explicit declarations that we are quite prepared to establish friendly relations with the British Medical Council, but that we are not going to submit to their dictation for all times to come? If they want to treat us on a footing of equality we are quite prepared to co-operate with them. At the time of introduction of the Bill, it was stated that the aim of the Bill was to secure the recognition of the British Medical Council. That was the declared object with which the Bill was originally introduced. But that was not the object with which agreement to any University representation was sought for. There is another danger that this drastic change in the preamble has created and that is that the British Medical Council will not recognise Licentiates and the Government of India have thus thrown to the winds the claims of 2000 Licentiates. The preamble, as in the amended Bill, excludes Licentiates from the scope of the All-India Medical Council Bill. Therefore, the high sounding phrase—" maintenance of a uniform standard for the whole of India " is all bunkum and moonshine. In other words the amended Bill seeks to perpetuate a caste system in the Indian medical profession which we are so strenuously trying to remove (cheers). In your speeches from different public platforms you have spoken over and over again against this evil of caste system in the profession. Sir Henry Gidney once stated that there was no other service in the world in which once a man starts as a Sub-Assistant Surgeon he remains always a Sub-Assistant Surgeon, and he expressed his deliberate opinion that no matter how a medical practitioner began his career, if he has got merit and grit, there is no reason why the door of advancement should be banged in his faces. That was the view that Sir Henry Gidney expressed. Now, this Bill will for all time to come prevent Licentiates from being included in the All-India Register. That is the second point on which I should like Sir Henry Gidney to give us the benefit of his views and experience. I shall not attribute any motives because we are here to discuss the merits of the Bill dispassionately. But let there be no mistake about it. We are not going to tolerate any divide-and-rule policy (cheers). The ideal which we have set before us and which we are struggling so hard to achieve is the unification of diverse classes in the medial profession in India to-day into a homogeneous body actuated by common interest and working for the common good. But we do not want that our own Government, with the new orientation of policy and outlook dictated by the coming constitutional changes, should perpetuate this caste system and racialism by means of a statute. I would challenge any one to show me that this differentiation has been perpetuated by statute anywhere else in the world. The Licentiates themselves want their standard to be raised. In Bengal, we have been trying to raise the standard of the Licentiates. We want to raise the standard so that our Licentiates might receive the hall-mark of efficiency. Recently, the Council of Medical Registration in Bengal wanted to raise the course of study for the Licentiates from 4 to 5 years, but the Government opposed that. Not only in Bengal, but in other provinces as well the Government is stoutly opposing attempts to improve the status of the Licentiates, thereby prepetuating the lower standard. On the one hand, they perpetuate the lower standard and on the other, they publish it to the world " they are lower standard people, how can they expect recognition!" The third point which I would urge is the composition of the proposed council. This is a very sore point and Col. Gidney has several times discussed this matter with some representatives of the Indian Medical Association and he knows what view we hold on the subject. Why should they seek the back-door of nomination to get there? If there are able men amongst officials, let them get there through the channel of nomination. But so far as the independent medical profession is concerned, we contend that it embraces all medical men—be they members of the I. M. S. or of any other statutory bodies or be they officials or non-officials. Surely ability and efficiency are not the monopoly of any particular service. We can never accept a council dominated entirely by Surgeon-General or their nominees, whether officials or not.

There is another thing which I do not understand. This Bill was circulated for opinion amongst the various medical bodies who submitted their views on the major in one course. But what is the result? After opinions were invited, these bodies passed resolutions in public meetings declaring their views, and we thought that there was some sincerity behind this request for opinion, but we find that none of the points which we have urged have been given any heed to. On the other hand, official representation in the Council has been sought to be further increased, so much so that direct representation of graduates has been reduced

to nil. At present, graduates have no direct representation on the Council. They say, "What have the graduates to do in the Council? So long as Universities have representation, what is the use of giving separate representation to graduates?" We, on the contrary, hold that this Council, if it is constituted, as proposed in the Bill, is not only going to destroy the uniformity of standard, but also to strike at the root of medical ethics. We stand to lose everything if our names are struck off for the purpose of representation. We therefore say that we cannot submit ourselves to the dictates of a body in which officials will have a preponderance of representation. Would officials, I ask, allow their fate to be decided by us? If not, why should we have our fate decided by a body in which we have no direct representation?

Therefore, you, Sir Henry Gidney as a stalwart champion of the medical profession, we look up to you to take up our cause in the Assembly and to prevent this mockery of medical Swaraj. (Applause).

DR. M. N. BOSE: I agree with Dr. K. S. Ray in all that he has said except on one point on which I hold a different view. That is as regards the question of having the Licentiates on the same register. As matters stand at present, we have two systems of training, one six years' training and another four years' training. So long as we have this difference we must have a separate register for each class. That is the only point on which I differ from Dr. K. S. Ray. As regards the constitution of the Council, the necessity of having a uniform standard and so on, I agree entirely with the views put forward by Dr. K. S. Ray. We have no second opinion about those questions. The only thing is that we must have a separate register for the Licentiates so long as we have two different systems of training. These licentiates class should not be included in the proposed register. That is the only point I wish to urge.

THE CHAIRMAN: What we have decided is coming before you on Tuesday. We saw the difficulties pointed out by Dr. Bose. There is no doubt that they are turning out very efficient men as Licentiates. But when we find that those who have devoted the best of their life to the training of this particular class of medical men think that there should be a differentiation between licentiates and graduates, we thought that the former should be included in an appendix. That is to say, at the start their names will appear in an appendix to the register and later on every one will be brought up to the same level.

DR. M. N. BOSE: So long as you maintain two different standards of training, how can you have one register for both classes. It has been pointed out by Dr. Ray that it is not the fault of sub-assistant surgeons if they are not allowed to raise their standard and status. But the point is that if they want to find a place in the register, they must be properly trained. They must be prepared to devote a certain number of years to get themselves properly trained and so long as they do not do that, they cannot find a place in the register. To my mind, the Government wants to maintain this lower standard not from any base motive. They find that in Mofussil areas they must have a type of man who would be willing to work on a small remuneration and be satisfied with his lot. On the other hand, if they send out men of higher calibre, they would not work on Rs. 20/- or Rs. 30/- per month in these out-of-the-way places. Therefore to turn out only men of higher calibre, the Government will be at its wit's end to secure men who would be willing to work in Mofussil stations. That is why it is absolutely necessary at the present moment at any rate to maintain a lower standard of training. It is not a question of relegating these men to a position of inferiority for all time to come. It is a question of giving them a cheaper education which will qualify them to work in villages. That is the kind of training that Government is giving them and is trying to maintain. Dr. Ray has tried to make out that Government would not let them improve their lot. That is not so.

THE CHAIRMAN: I think Dr. Ray's statement may be taken with a little bit of poetic license. We know that he does not want it to be taken strictly in its literal sense. You are quite right, Dr. Bose, that it is necessary to maintain two standards, but perhaps it is due to the fact that people who take up the Licentiates course do so because they have not the means to acquire the preliminary educational qualifications necessary for admission in the Medical College. I have known many people who entered the Campbell Medical School first, and then after completing their training there, have joined the Medical College as medical students. I have known of such cases because people whom I have examined in the Campbell School, I recognised them by accident in the Medical College. When I was Civil Surgeon of Howrah, I discovered one of them to be an assistant surgeon there and later on I found that he went to England and obtained a Fellowship and he is there. Now that man utilised his opportunities to the best advantage and he has shown that with a small beginning one can go up the ladder. I do not wish to mention too many details. But there was a senior member of the I. M. S., son of a Lt.-Governor who got cholera. I had a colleague of mine living in the same place and he went to treat that gentleman. But it was on the advice of an assistant surgeon that the vein was opened and the patient survived. I can tell you that I have often got myself treated by licen-

tiates; they are my colleagues and I have the highest regard for them. So that, you are sending out to the country side medical men who are in every way fully qualified, whose certificate on death will be of the same value as the certificate of an M.B., B.S. of London. The nation lives in the country and I think that Sir Henry Gidney will bear me out when I say that we are sending out to the rural areas an efficient class of men. But as I have said that in the University the majority of the committee have found that Licentiates could not be put in the same register, but they might be put in an appendix to show that they are qualified people. There is no doubt that there are two different categories and for certain purposes we have kept them. But whatever the past, now-a-days the career of a sub-assistant surgeon does not lead to a blind alloy. I have recommended 10 persons in the rank of sub-assistant surgeons for promotion. So men of proved ability and merit amongst sub-assistant surgeons are getting promotion and the disability to which Dr. Ray referred, namely, that once they are included in one category they always remain in that category, is being gradually removed. In time to come, there would be no harm in having one category and only one standard. But at the present moment the whole question is whether sub-assistant surgeons or licentiates are going to be left out or not.

Dr. M. N. Bose said that he did not wish to be misunderstood. He did not mean any reflection on the licentiates. What he urged was that so long as two different types of training and standard existed they must maintain two registers. He agreed with the Chairman that there ought to be a second schedule embodying the names of Licentiates. But he liked it to be clearly understood that he never meant that Licentiates as a class were an inferior type of men.

Dr. M. Roy: As a newly passed Licentiate, I appreciate the difficulties of the Licentiate class and I desire to say a few words about them. Hearing that Sir Gidney is going to address the meeting I came here bearing in mind his famous utterance that even though a clerk can rise to become a member of the Viceroy's Cabinet, a subassistant surgeon can never become an assistant surgeon. I thought that there was a man who was coming to this meeting and I hoped that we should get some help from the man who spoke out the truth. I was encouraged still more when I saw Sir Hasan Suhrawardy who was doing his best to give facilities to licentiate students. Now, with great respect to Dr. M. N. Bose, I dare say that he has based his case on a wrong hypothesis. He seems to think that Government are turning out licentiates for treating villagers, whereby he means that villagers' life is not worth saving. Disease is no respector of persons. A case of pneumonia in a village is as bad as a case of pneumonia in a town. I earnestly hope that Sir Gidney would take up the cudgels on our behalf and give practical effect to his public utterances which are still fresh in our memory by having the names of licentiates entered in the register. I personally believe that if we have in our midst such large-hearted and liberal minded persons as Sir Hasan Suhrawardy, India need not despair of its future. This Medical Council Bill, if passed into law in its present form will set brother against brother. Is it not a painful sight to see the elder brother driving out the younger brother from the common fold? I may be a licentiate but that is no reason why I should be treated as a pariah. I belong to the same noble profession as my elder brothers. As regards raising the status of licentiates, I remember that a deputation of the All-India Medical Licentiates waited upon Col. Megaw in 1928. We advised them to try to raise their status and he said that if they did so they would get the recognition they desired. Since then five years have elapsed and if within this period the authorities have not taken the initiative in the matter of raising their status, then I do not know who is going to take the initiative and how on earth the status is going to be raised? We thought that if we approached the University authorities perhaps we might get a move on. So, we led a deputation to Sir Nilratan Sircar who in his turn also advised us to raise our standard if we wanted the desired status. A few days before this Bill was introduced in the Assembly, Sir Fazli Hussain also advised us to try to raise our standard. But may I ask him would Government come forward with a scheme whereby we could raise our standard? Government, I dare say, would do nothing of the kind. They would put forward the usual plea of financial stringency. I would, therefore, request Sir Henry Gidney to advocate our cause in the Assembly and to see that the licentiates are taken in, and for God's sake don't perpetuate the present class distinction in the medical profession in a statute.

Dr. A. C. Ukil: We have listened to the sentiments expressed by our illustrious Chairman—sentiments which have been uppermost in our minds for months past. I think that there are three salient points arising out of the Bill which require consideration. First, the object of the Bill. As regards that, we all feel that we cannot eliminate licentiates. It is only in the United Kingdom that there is difference in degrees and qualifications. In this country why has this differentiation been introduced and maintained hitherto? I think the training of licentiates had to be introduced in the country for two reasons. One is that a large tract of the country had to be

supplied with qualified medical practitioners within a short time. According to my calculations I find that it would take 20 years to attain the standard of our practitioners for a population of 2,000. We should have a uniform standard for the whole of India. That should naturally be the aim of the medial profession in this country. Even if we cannot achieve that aim, we have no right to eliminate licentiates; because after all it was distinguished men in Government, who belong to our profession, who introduced the system of training of licentiates in India, and it is they who have recognised these men for so many years. Therefore, I cannot conceive a greater injustice done to a class of men who have a distinguished record to their credit than to refuse to accord them the right to have themselves included in the All-India Medical Register. If for other reasons we recognise them in the country for purposes of registration, we cannot possibly eliminate them merely for the sake of attaining reciprocity. When the G. M. C. was formed in Great Britain they included in their Register L. S. A. qualification. In Calcutta we have a distinguished member of the medical profession who is nothing but an L. S. A. I contend that in the beginning at any rate, when we are attempting a cohesion of the profession, we need not be very strict in registration. We ought to include in the register all the different categories of qualifications, *e.g.*, University qualification, licentiates and European qualifications. That is to say, so far as recognisable qualifications are concerned, I submit, that they are all on the same level, and if any differentiation is made between one set of recognisable qualification and another, that will be unjust and unfair.

As regards reciprocity, I have had opportunity of observing methods of teaching in many countries, especially when I travelled in Europe as a Fellow of the University. In France, the method of teaching differs from that in Great Britain. So also in Germany. And yet reciprocity obtains in these countries. That is if you want to be recognised you must recognise us on an equal footing. In the statement of objects and reasons appended to the Bill, it is stated that if people with registrable qualifications in Great Britain come here, they would *ipso facto* be entered in the register here. That is an act of injustice to be perpetrated on the eve of great constitutional changes which are looming before our eyes. As regards constitution of the Council, we agree with Dr. Ray that the profession ought to be given a free hand to elect such representatives the profession considered fit by virtue of their merit and qualifications. We also feel that the elected element should have preponderance of representation in the Council. If our demands are met, we should have no objection to the Bill being piloted through the Assembly. But we are afraid that the indications are that things will not go on so smoothly as we expect. So we think it would be better if the Bill were postponed for a couple of years till the constitutional questions were settled.

DR. S. C. SEN GUPTA pointed out that when the Medical Act came into force in Calcutta, all members of the profession at the time, both qualified and unqualified, were included and therefore this question is not so very vital from the point of view of the Bill itself. The object of the Bill should be to put our house in order. If therefore it was a question of putting our house in order rather than conforming to the qualifications granted by G. M. C., then the matter became very simple. They could, as the Chairman had pointed out, wait till after federation was an accomplished fact, and then they could take up the question of reciprocity. First of all, they doubted very much whether the Bill would really serve the purpose for which it was intended or whether there was some ulterior motive behind it. Secondly, there was no reason why the Bill should be hurried through. India did not want it, the profession did not want it. As regards reciprocity, it did not depend so much on qualification. It was really a political end. In Australia and South Africa, a man with British qualifications, if he wanted to set up in practice, had to pass the State Board examination and acquire the necessary residential qualification. That did not mean that British qualifications were inferior. The whole question was one of protecting our own nationals. That was the crux of the matter. If an English doctor wanted to practice in Paris, he must live there for a number of years before he could be deemed eligible for practice. There was at present reciprocity between Italy, England and Japan. But if India wanted to keep out Japanese, they could not do so. Because by virtue of reciprocity between England and Japan, a Japanese doctor could get his name entered in the Colonial list, which meant that when he came to this country he would be automatically entered in the Indian register. So that, Italians and Japanese could very well set up in practice here by reason of having their names entered in the British Colonial Register. Therefore the question of having reciprocity between one country and another must be determined on the basis of absolute equality. Whether or not they should have reciprocity ought not to be discussed until they had automony. For these reasons, he thought the Bill ought to be postponed. In conclusion, he desired to express his acknowledgments to their worthy Chairman who had always fought so strenously in the Council to uphold the rights and privileges of the medical profession and he was glad to find that Sir Hassan had not lost his zeal and fervour after so many years of hard labour.

Rai Bahadur Dr. Harinath Ghosh said that his feeling was that communalism and differentiation in science and scientific matters always led to most deplorable consequences. By placing the licentiates in a different category, they would be introducing a spirit of communalism and class distinction in the medical profession. It would also foster a separatist tendency, while their object was to achieve cohesion and solidarity.

Dr. Narendra Nath Basu: As this meeting was called mainly for the purpose of hearing the views of the Legislative Assembly, I think we ought to give Sir Henry Gidney a chance to speak. One thing that I desire to call attention to is the desirability of postponing consideration of this Bill. I was one of those who pointed out that the Bill should be postponed. That was long before there was any promise from the Secretary of State that provincial autonomy should be given. I think the measure ought to be put off until the federal constitution was working. Because otherwise it will not be possible for us in British India to entertain the claims for recognition of the Universities in Indian States turning out medical graduates. For instance, the Bengal Medical Council have already recognised the medical qualifications from the Mysore University. But if this Bill is passed into law, Mysore University graduates would be excluded altogether from the purview of the Bill. That is one reason why the Bill should be postponed. Furthermore, we have been told that Hyderabad has applied for recognition of their University as qualified to pass out students with registrable qualifications. As regards the preamble to the Bill, I hope Sir Henry Gidney will put forward his views about it. It appears that the preamble has been considerably changed and the words " higher qualification " have been introduced. Sir Henry Gidney, as a member of the Assembly, might define the expression " higher qualification " and for ought I know, he might exclude from that definition those who possess the degree of L. M. S.! Sir Henry Gidney was more fortunate than myself in going to Great Britain and improving upon his L. M. S. by acquiring British qualifications. I had not that good fortune and one day I might find that L. M. S. has been excluded by the votes of the Assembly! I hope Sir Henry Gidney will protect us from being disqualified. If there is going to be no reciprocity, then why take the trouble of excluding the licentiates? Had there been any chance of reciprocity through this Bill, then you might have said " We exclude them because otherwise G. M. C. would not recognise us." But the Secretary of State has not given us any indication as to whether after the passing of this Bill the G. M. C. would recognise it as meeting their demand. Of course, the Secretary of State cannot hold out any such promise. But still when there is no chance of reciprocity, why exclude licentiates at all? In the preamble it was originally stated that the object was to have a list of all qualified persons throughout India. Government probably thought that that was going too far because various provinces have recognised licentiates as qualified persons and for Europe to exclude them from the All-India Register would be anomalous. So, they thought of introducing the words " higher qualification." We don't see any necessity of excluding them. All that we want is a list of names of different categories—those possessing University qualifications and those not possessing that qualification. It is well-known that persons who are considered qualified in one province might not be deemed qualified in another province.

Sir Henry Gidney then addressed the meeting.

" Mr. Chairman, ladies and brothers of the profession: you have placed me in an extraordinary difficult position to-day, in that I have frequently referred to as a sort of an information bureau, as a sort of Intelligence Department, a liaison officer between the Government of India and my colleagues (laughter). In other words, I am expected to tell you all that the Government of India is going to do or intends to do about this All-India Medical Council Bill. Well, not being in the confidence of Government I cannot tell you what the Government is going to do. But I shall endeavour to tell you all that I *think* Government will very likely do, and this I have gathered from unofficial discussions I have had with various responsible people. But before I do this, let me ask you a conundrum "when is a right thing wrong and when is a wrong thing right!" There is only one answer: " When such a thing is done by Government," and I refer particularly to the existing compartmentism in the Indian medical profession. I have frequently said both in and out of the Assembly that the Indian medical profession (official) is the only one in the world that retains this compartmentism to such an extent that when one is once a subordinate in that service he is always a subordinate.

Why should we allow that to be tolerated and perpetuated in this country? Why should we allow this " compartmentism " to be introduced in the official Medical Cadres? Speaking for myself I would hail with delight the day when the word " Subordinate " is deleted from the official vocabulary (cheers).

Whether Government decides to continue its past policy or modify it—and we see now-a-days ample evidence of their desire to introduce a change in their policy—there is no doubt of the attitude of the medical profession in regard of this question. We know what they really want and for what we are striving. But we are apt to place

great market value on ex-India medical degrees, and it is we who are to blame for placing a high premium on European degrees. But remember the degree does not make the doctor; the doctor makes the degree; and whether you are a Sub-Assistant Surgeon, or an Assistant Surgeon or an I. M. S. officer, when death faces you as a medical man, it matters little to the patient whether you are English or Indian qualified; it is skilled experience alone that counts.

Now I come to the subject under discussion. Rightly or wrongly, there seems to be a feeling of mistrust and antagonism between the Indian Medical Profession on the one hand and the I. M. S. on the other. Now, as to who is to blame for that, or how that feeling has been engendered, I am not here to discuss. Suffice it to say, that unfortunately there is that feeling against the I. M. S. I submit that this is due to the reaction of the wave of democracy and socialism that is spreading all over the world to-day the spirit of resentment against officialdom. I agree with you that the time is near at hand when officialdom in this country will have to alter their views in regard to most things. They are doing so to-day. But to blame the I. M. S. for this mistrust is not correct. I happen to have inner knowledge of the opinions of the highest of the medical services in India, and I shall give you two small instances, which I hope will encourage you to change your opinion. You have to-day in General Megaw a Director-General of the I. M. S., one of the most sympathetic officials you ever had. And I speak from personal and positive information when I say that he is most anxious to satisfy Indian opinion, as voiced by the Indian Medical Association. I go further and say that you have in the present D. M. S. in India General Corrie-Hudson, I. M. S. an equally sympathetic official. He said to me "I should welcome the day when a Military Sub-Assistant Surgeon will be able, if he proves his fitness, to become the Director of Medical Service in India. Why should any able man be barred.?" (cheers). This is the opinion of two of the highest official medical men expressed within the last three months, and I give it to you for what it is worth.

Now, gentlemen, I am afraid we, ourselves, are mainly to blame for the present state of things. We have forgotten the truth of the old adage. "Others value you as you value yourself." When we bear that in mind, we come to the reason why we are so badly off and suffer so much from the inferiority complex. The reason is because the medical profession in India is poorly represented in the Legislative Councils and the Assembly. We want more doctors there to guide our deliberations. There are only two of us in the Legislative Assembly representing the medical profession. Of course, we have Dr. Moonj there, but he is not in practice. We require more medical men in the Legislative Assembly. But there must be a friendly understanding between official and unofficial medical men—that is our most essential need of the hour. Remember! Trust begets trust —Talking of reciprocity and equality, it will only be when we, in India, put a high value and premium on our own degrees, our own qualifications and standards of medical education, that we can then afford to demand equal reciprocity. To-day we, ourselves, place too high a standard on European degrees and too low a value on our own qualifications. We see evidence of this among ourselves daily. As for myself I shall hail the day when every appointment in this country is prefaced with the words "None but Indian Graduates need apply" (cheers). You talk of reciprocity, do you think Germany would accept you if you wanted to establish reciprocity with their Medical Council? They would not accept you and no other country will. You would have to go through their course of study and satisfy their tests before they would accept you, the same as the General Medical Council is demanding of us.

I now come to the points which Dr. K. S. Ray asked me for information. The first question is in regard to the preamble of the All-India Medical Council Bill. I admit there is a difference between the original Bill and the amended one. I shall refrain from saying anything which might savour of breach of confidence. But I know I shall not be letting out any secret, when I say that when this Bill is presented to the Legislative Assembly, Government, I think, will present it with its blessings and it will be in the same terms as the original Medical Council Bill was presented in England *i.e.*, as regards non-qualified men. As a public man, it would be foolish for me to make a statement, but I think you will find that Government will be more conciliatory and anxious to please public medical opinion, and I think that the Indian Medical Association has played no small part in inducing Government to alter its angle of vision. I do remember the pleasure I had of meeting at Delhi the delegation led by Dr. Ray. We saw the Secretary-in-charge of the department and the Director-General, I. M. S., and we discussed the matters at issue at considerable length, and I do wish to tell you that the delegation produced a great impression on the minds of the authorities and as a result I do believe that licentiates will not be excluded from the Register.

The question has been raised as to whether we should not place these names on the Register in two categories, placing the licentiates in an Appendix. Are you going to look upon Licentiates

as remnants of the pasts as your " after thoughts " or are you going to improve their status and accept them as equals? It is up to you to influence public opinion to insist upon an equality of status in the profession; the M. B. holder as a rule looks down on the L. M. S. and the L. M. S., in turn, looks down on the Sub-Assistant Surgeon. You cannot stop these valuations, but you can stop this difference in status being perpetuated permanently. From the Register's point of view, you should be one category. There might be difference according to your degrees, but any attempt to have two categories on the Register of the Council would perpetuate the evil which we desire to stamp out. And I can assure you that when I speak on this Bill in the Assembly, I shall stress this aspect of the question as strongly as I can—that we should not perpetuate this compartmentism.

If you take your memories back to the past you will find that we have been denied adequate facilities of medical training in this country, with the result that our students have to go abroad for higher training, which demands from our parents a large expenditure of money. Why should India be the only part of the British Empire that is called upon to send her sons across the seas to be trained for employment in her own country, India? Why should we not have our men trained in India, so that India can supply all her medical needs?

As regards the second question raised by Dr. Ray, namely, that the provisions of the Bill as they stand, seek to introduce a sort of caste system in the Register, I have dealt with that. As regards licentiates—what is going to be their status—I cannot see any valid reasons as to why Government should propose to differentiate them from the graduates except to perpetuate the inferiority complex. I may tell you that the Military Retrenchment Sub-committee have recommended that there should no longer be any training for sub-assistant surgeons for the Army. The Army authorities have accepted this recommendation and those who are in colleges and schools to-day, will go on with their training, but will have no guarantee of employment after completion of their training. Government is convinced that they can get an equal number of M.B.'s for these sub-assistant surgeon appointments in the Indian Army. They say that the market is glutted to such an extent that they can get as many graduates as they like. The desire is to effect economy.

I could refer to many of the factors showing Government's desire to standardise medical training and so obtain uniformity of medical degrees. Why should there not be a uniformity on the register? Are we to satisfy the meticulous demands of the British Council? No. Are we to take lying down what the British Council orders us to do? No. There should be reciprocity, but we do not want a one-sided reciprocity. It should be mutual. If we demand and secure a high and uniform standard in our medical schools and our degrees and reciprocity are not granted, we can demand from outsiders to come to this country and pass our tests. Indeed, let them come to this country and sit for competition for the I.M.S.

As regards composition of the Indian Medical Council Dr. Ray seems to hold very decided views on it. But how can I say what Government is going to do about it. This much I can anticipate. Government will not be so much against a compromise, as it was before on the composition of the Council. But then, Government will insist on the Chairman of the Council being an official, presumably the Director-General I.M.S. But because the Chairman is an official it does not necessarily mean that he will boss the show. He never can boss the show when his Council is against him. But I am sure you will be pleased to know that I think Government is more prepared to-day to recognise and even to compromise in many of the demands made by the Indian Medical Association. (Cheers). How far it is prepared to go I know not, but when the spirit of compromise exists and I feel it does exist, a settlement is surely in view and this is my greatest hope. But I find there is a resolution before you for postponement of the Bill. The word "postponement" usually connotes "post-mortem." It really leads you to the dead-house of inactivity. I cannot see your desire for postponement and the reason for it. If you are going to wait for a Federation of British and Feudatory India's you are going to wait for a mighty long time. You have to know the idiosyncracies of Indian Princes to realise that it will be many years before the Indian Princes will really federate. Take it from me that if you are going to wait for federation, you are going to wait for many many years. If there is nothing radically wrong and a healthy compromise is effected with this Bill, give your mandate to your representative in the Assembly and take it from me Government will listen to you. If you do not want the Bill, chuck it out. But don't play with it by postponing it. To our young licentiate friend who spoke so courageously a few minutes ago, I like him, I would say, take what Government gives you: otherwise, the remedy might be worse than the disease. You will find that the others, *i.e.*, graduates, might push you out.

Whatever might be said to the contrary, there is no doubt that there are good reasons for introducing this Bill. I admit the British Medical Council held a revolver at us and we, in our turn, held a revolver at them. But I think the time has now come when we should both put down our revolvers and shake hands. There is no doubt, as the British Medical Council has truly and correctly

said, that there are certain Indian Universities who do not come up to their standards, and it is no use denying this. Calcutta, they said, is absolutely well qualified; ditto Bombay, ditto Madras, ditto Punjab. But they had every right to say that two of the youngest Universities were not up to their standards. And rather than have multiple standards existing in the various Indian Universities, with whom they could not separately negotiate, they asked that there should be one common standard. That led to some misunderstanding and that also wrongly led to the present bitterness between the I.M.S. and the Indian medical profession.

As a former member of the I.M.S. I may tell you that things have changed and changed considerably. At the present rate in another 10 years there won't be 10 per cent. Europeans in the I.M.S. In another 15 years there will be about 1 per cent. European in civil and in another 20 years there will be none. If you say " Let there be no official representative in the Council," you are asking for the moon and the sooner you stop this nonsense the better. There must be a transitional period. You must realise that the time for an independent medical existence, *i.e.*, non-official is not yet. A few years more and the clouds will roll away. I do beg of you—much as I respect my friend, Dr. Ray—don't let your outlook be clouded by this ridiculous idea of postponing the Bill till Federation is a *fait accompli*. Do not throw away a certain thing for an uncertain thing. It is after all for the young to decide and Dr. Ray is on the border-line of the aged and the young.

I am extremely sorry that I have taken up so much of your time. I wish I had been asked more questions which went down to fundamentals. I am prepared to answer anything you ask me, but let us stick to the essentials and that is to get this Medical Council Bill so framed that it will satisfy India and Indian opinion and be a blessing and an elevation to the profession not a curse and a humiliation. (Applause).

* * * * *

In reply to Dr. K. S. Ray, Sir Henry Gidney said, " Dr. Ray has rightly said that this Bill is not going to be proceeded within September session, because Sir Fazli Hussain will not be there. It is beyond doubt that we shall have a session in November, but I do not think this Bill will be taken up in that session because the November session will be an extraordinary one to deal with the Emergency Finance Bill. Therefore I think it is extremely likely that Fazli Hussain will take it up in November session. In any case one never knows what will happen. I believe I will not be in India for I go to London as a member of the Round Table Conference. To be on the safe side, I would say that the Bill should not be proceeded with until the winter session in 1933. This is only my impression and I would suggest you to ask Government to postpone the Bill till the winter session of 1933."

Dr. K. S. Ray: Sir Henry Gidney has referred to the interview we had with the Director-General I.M.S. on behalf of the Indian Medical Association. I am glad to hear from Sir Henry Gidney that that interview created a change in the mentality of Government. We were greatly disappointed because after receiving our opinion the Government amended the Bill and made it worse. Now if Col. Gidney assures us that Government is going to modify it more in accord with our views, there is no one here who would not approve it.

Col. Gidney said he could nat offer any assurance on behalf of Government and no one should put into his mouth words that he had not uttered. He had only given his personal impression, supported with the belief that Government was more disposed to be conciliatory with the Indian Medical Association and anxious to come to amicable compromises for the good of the medical profession in India.

On the motion of Dr. K. S. Ray seconded by Dr. A. K. Chakraborty, the following resolution was passed:—

> Resolved that the meeting disapproves of the Indian Medical Council Bill, as introduced in the Indian Legislative Assembly on 23rd March, 1932, having ignored the original intentions and the Bill is unacceptable to the profession whose unanimous demands for its amendment have been ignored and that the further consideration of the Bill should not be proceeded with before the winter session of 1933.

The Chairman then conveyed his acknowledgments to Sir Henry Gidney for his illuminating address.

With a vote of thanks to the Chair, the meeting dispersed.

Questions in Assembly

Notice of the following starred questions has been sent by Mr. Satyendra Nath Mittra, M.L.A. :—

A. Is the Government of India aware that some of the local Governments, particularly the Central Provinces Government, have refused to permit the medical men in Government services to join the Indian Medical Association?

B. Is it a fact that medical men in Government services are permitted to join the British Medical Association and its branches in India?

C. Is it not a fact that British Medical Association is an institution composed of all sections of medical practitioners and has no Government control over it?

D. (*a*) Is it not a fact that British Medical Association has standing committees to safeguard interests of I. M. S. and other services and also criticises the Government whenever necessary?

(*b*) Is it not a fact that most members of the I. M. S. and R. A. M. C. are members of the British Medical Association?

(*c*) Are the D. G. I. M. S. and the Director of Public Health, members of the British Medical Association and the Indian Medical Association?

(*d*) Is not the Government aware that the Indian Medical Association like the British Medical Association is a purely medical organisation, composed of medical men only, the membership of which is open to independent practitioners as well as to medical men in Government services?

E. (*a*) Will the Government please state why they make this discrimination?

(*b*) Is it due to the fact that the British Medical Association is a British organisation with headquarters in London and the Indian Medical Association is an Indian organisation with headquarters in India?

F. Will the Government of India take necessary steps to remove this ban on Government servants joining the Indian Medical Association?

G. (*a*) Will the Hon'ble Member-in-charge be pleased to state whether it is a fact that the Surgeon-General in some of the provinces, *viz.*, Bengal, prevented medical men in the Government service to attend the VIII All-India Medical Conference which was held in Calcutta during the last Easter holidays by issue of circular or personally or in any other way?

(*b*) Is it a fact that the Hon'ble Minister, Local Self-Government, Bengal, opened the Medical Exhibition held at the said Conference?

H. (*a*) Is the Government aware of the resolutions passed by the last VIII All-India Medical Conference?

(*b*) If so, what steps the Government proposes to take on the resolutions?

Annual Report

Indian Radiological Association

It is now one year that the Indian Radiological Association has been started with the following ideas :—

Whereas the use of the Roentgen Rays and electricity in medicine has made much rapid progress in recent years and whereas the interests of medical men who have specialised in these method of treatment and those of the lay public who take advantage of such treatment, should be safeguarded and protected, it is considered desirable to form an Association of those engaged and interested in such subjects.

Members may be enrolled from amongst the following :

(*a*) Medical radiologists and other medical and dental practitioners.

(*b*) Physicists.

(*c*) Engineers and Manufacturers.

(*d*) Radiographers.

(*e*) Others interested in X-rays, Radio activity and Physiotherapy and allied subjects.

The object of the Association shall be to promote the advancement and study of radiology, radioactivity, radium therapy, physiotherapy and allied subjects of India; and to take whatever steps may be deemed necessary to this end, such as, encouraging discussion of radiological problems, promotion and maintenance of centres of

research and teaching, co-operation with workers in these subjects both in India and abroad.

The transaction of the Association would be published at first in one or more of the reputable journals of the country and later on, when circumstances permit in its own journal.

* * * * *

The first inaugural meeting was convened on 2nd February, 1931, at Chittaranjan Seva-Sadan and a provisional council of office-bearers were elected as follows:

PRESIDENT:

Dr. Ajit Mohan Bose,
M.B., ch.B. (Edin.), L.M. (Dub.).

VICE-PRESIDENT:

Lt.-Col. J. A. Shorten, M.B.,
M.R.C.P. (Lond.), I.M.S. (Retd.).

SECRETARY:

Dr. Subodh Mitra, M.B., M.D. (Berlin),
F.R.C.S. (Edin.).

TREASURER:

Dr. Mrityunjoy Mitra.

MEMBERS OF THE EXECUTIVE COMMITTEE.

Capt. M. Mukherjee, M.B., D.MR.E. (Cantab.).
D.M.R.E. (Cantab.).
Dr. D. N. Banerjee, M.B., M.D. (Berlin).
Dr. N. G. Moitra, M.D. (Berlin).
Capt. R. Banerjee, M.B.
Dr. K. B. Ghose, M.B., D.M.R.E. (Cantab.).

The minutes of the meeting were sent to all the radiologists and electrical engineers of the different provinces of India and the idea was warmly accepted by them all.

* * * * *

There were 10 meetings during the year, and the work was mainly constructive, *i.e.*, to frame up the memoranda and article of association, to bring different Radiologists of India in closer contact for more active co-operation and thus to consolidate the work of Radiology and Electrology in India.

The first activity of the Association was shown by sending the Secretary of the I. R. Association as a delegate to the Third International Radiological Conference which was held in Paris in July, 1931. Indian Radiological Association attracted the attention of the pioneer Radiologists of the world, who came to attend the Congress in Paris, and three honorary members were elected on behalf of the I. R. Association. They are:

Prof. Thurston Holland, (London).
Prof. Forsell, (Stockholm).
Prof. Beclere, (Paris).

Further activity of the Association consisted in representing the Radiological Section of the Eighth All-India Medical Conference which was held this year in Calcutta.

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The annual meeting of the I. R. Association was convened during the conference week, *i.e.* the last week of March, 1932. The following resolutions were passed:

1. Henceforth the admission fees be deleted.

2. Annual subscription be reduced to Rs. 12/- instead of Rs. 24/- for ordinary members; and Rs. 6/- for associated members.

3. The members of the executive committee should be reduced to 6 instead of 12.

4. Any members who send any article to any journal should get as many copies as he possibly can and send as many copies as he can to the Secretary for distribution to various members.

5. Members outside Calcutta should be requested to enlist as many members for the Association as possible in their own provinces with a view to start branches in provinces.

6. The office-bearers of the Association were then elected; they are as follows:—

President—

Dr. Joshi, M.B., B.S. (Bomb.),
D.M.R.E. (Cantab.).

Past President—

Dr. A. M. Bose, M.B. ch.B. (Edin.),
L.M. (Dub.).

Vice-Presidents—

Dr. J. A. Shorten, M.B., M.R.C.P. (Lond.),
I.M.S. (Retd.).
Dr. Rama Rau, M.B., B.S., D.M.R. (Vienna).
Dr. Galstaun, M.A., D.M.R.E. (Cantab.),
M.R.C.S., L.R.C.P.

Secretary—

Dr. S. Mitra, M.B. (Cal.), M.D. (Berlin),
F.R.C.S. (Edin.).

Joint Secretary—

Dr. S. Mukherjee, M.B.

Treasurer—

Dr. M. Mitra.

Executive Committee—

Dr. P. Chatterjee, M.B., F.R.C.S. (Edin.).
Dr. N. Chakraverty, M.B.
Capt. M. Mukherjee, M.B., D.M.R.E. (Cantab.).
Capt. R. P. Banerjee, M.B.
Dr. K. B. Ghose, M.B., D.T.M., D.M.R.E.
Capt. P. B. Mukherjee, M.B.,
D.M.R.E. (Cantab.), F.R.C.S. (Edin.).

Book Reviews

RADIUM CHIKITSA (Radium treatment)—By Dr. Subodh Mitra, M.D. (Berlin), M.B. (Cal.), F.R.C.S. (Edin.). Published by the author. Size D/C. 16 mo., p. 60. 1st Edition. Price Re. 1.

Radium and accessory deep X-ray therapy constitute the best available treatment for many diseases the chief of which is cancer. Unfortunately, until recently not only was this mode of treatment available in any of the numerous public institutions in Bengal but the idea and nature of this treatment was so vague and indefinite that people avoided it or began treatment at a very late moment when the disease was far too advanced to be cured. Now that Bengal has got a magnificent Radium Department attached to the Chittaranjan Seva Sadan, it is in the fitness of things that this little book has been published.

The book, written in lucid Bengali, explains in clear language the nature of the various diseases amenable to treatment by Radium and deep X-ray therapy and will be an interesting and instructive reading to the Bengali-knowing public and particularly to the Bengalee ladies who, as our present experience shows, do not suffer less than their European sisters from the fell disease cancer. The book contains many valuable and practical information which, if studied in time, will help in avoiding many unnecessary troubles and misgivings on the part of those who intend to have a course of this treatment. The book should be in every Bengalee home not only because it is a book worth possessing but also because the author has very thoughtfully dedicated all the sale proceeds of this book to the benefit of the Chittaranjan Seva Sadan, Calcutta.

A. N. G.

PHARMACOPŒIA INDICA. By Dr. Kartick Chandra Bose, M.B. Published by the Book Company Ltd., Calcutta. Size Demy 8 vo., pp. 370. First Edition. Price Rs. 3.

The need for an Indian Pharmacopœia in the light of modern scientific principles and practice is a long-felt one and the author's attempt to arrange the available information concerning the common Indian drugs belonging to the animal, vegetable and mineral kingdoms but which have since fallen into disuse is worthy of commendation.

Dr. Bose has been engaged in research work on original lines on indigenous herbs and plants from a long time and has made a study on the physiological and clinical reactions of various drugs according to the present day standard and his own observations are to be found alongside the findings of old workers.

The book forms a serious study and is sure to offer an impetus to different workers in the line by whose concerted action alone can the indigenous system of medicine be once more elevated to a standard of efficiency such as would be recognised throughout the world.

S. K. S.

ELEMENTARY & ADVANCED ANÆSTHESIA. By Dr. K. E. Madan, M.D., D.O.M.S. Illustrated. First Edition, 1930. Pp. 366. Size $7'' \times 5\frac{1}{2}''$.

With the progress and scope of surgical practice anæsthetics are coming more and more to the fore and by the choice of anæsthetic, technique and skill of administration the anæsthesist contributes not a little to the success of the operator.

This small book is one of the very few published so far. It deals with the whole subject of anæsthesia in a concise manner. The various anæsthetics and their different uses and modes of administration have been described in detail. Some newer anæsthetics have been included in the text along with the more common and time-honoured ones and measures to treat post-anæsthetic complications have also been dealt with. In fact the book is sure to serve as an useful guide to medical students and general practitioners.

S. K. S.

Current Medical Literature

The effect of Radiation Therapy upon Mediastinal Tumours.

MITRA.

Indian Medical Gazette, Vol. LXV, No. 2, February, 1930.

Mediastinal tumours are amenable to deep X-ray treatment, but as in other malignant cases the patient must always be in touch with the doctor, and the treatment should be repeated at suitable intervals. In this particular case, the patient did not take any further treatment within the last 10 months. Had he presented himself earlier, the case might have been reacted favourably.

S. K. S.

Filarial Affection and its treatment with Deep Roentgen Therapy.

MITRA.

The British Journal of Radiology, Vol. III, New Series, No. 35, November, 1930.

The patient himself belongs to the professional staff of a government medial college in India, and it was easy for the author to follow up his case. It is decidedly one of the cases which give a sidelight to an entirely new branch of medical science. The result of treatment can be best cited by the Professor's own statement: "After each deep X-ray application, there was a rapid reduction in the size of the swelling, and there was a gradual decrease in the oozing of the lymph-like fluid from the sinus. The sinus healed up completely, and the swollen mass went down, leaving almost no residual signs whatsoever. The swelling had existed for more than four months. There have been no signs of any recrudescence of the trouble for over six months. This is undoubtedly a case in which deep Roentgen ray-therapy has achieved a novel success."

S. K. S.

The Biological effect of deeply penetrating Roentgen Rays upon Indian skin and its practical application in Deep Roentgen Therapy.

MITRA.

Calcutta Medical Journal, March, 1929.

1. Although much has been done in the field of Roentgeno-therapy, there remains much more to be done. We are still in the embryonic stage although making a steady progress.

2. The first thing of consideration in the Roentgenological work is a good Apparatus. The X-ray machine manufacturers are working laboriously to keep time with Roentgenologists, and are trying to make the machine as perfect as possible from all standpoints. The author has been working with the Tropical Stabilivolt Apparatus of Siemens-Reiniger-Veifa Company since September, 1927; it is a very satisfactory machine giving a smooth and steady work. The S—R—V Company always replaces the parts by those of latest improvement thus keeping the plant quite up-to-date.

3. To have a clear understanding of the fundamental principles of Roentgeno-therapy, the physical dose estimation is necessary, but from a clinical and therapeutic standpoint, the biological dose or skin-erythema-dose is of vital importance. The biological dose can be estimated by only closely observing the reactions of Roentgen-rays upon the skin in a series of cases. The Seva Sadan Standardisation of skin-erythema-dose upon the Indian skin, *i.e.*, reddening of skin with raising of hair papillæ within 4 days and slight erythematous condition leading to bronzing of skin within 8 or 10 days and ultimately deep pigmentation within 6 weeks has been estimated.

Other conditions being the same, the skin-erythema-dose is obtained:—

(*a*) with 155 K. V. in 25 to 28 minutes, the corresponding S. N. Pastils reading being 7H and 8¼H respectively; and

(*b*) with 180 K. V. in 18 to 20 minutes, the Holzknecht Radiometer indicating 7H and 8H.

The advantages to work with 180 K. V. are:—

(1) Skin-erythema-dose obtained in less time,

(2) Intensity of Radiation much more pronounced,

(3) Deep percentage dose increased to about 5 per cent.

It is not advisable to work with a higher voltage than 180 K. V. specially in the tropics, because very little is gained so far as deep percentage dose is concerned and at the same time is very discouraging from economic standpoint.

S. K. S.

Further Investigation into the Biological Reaction of Deep X-rays upon Indian skin and standardisation of Dosage according to the International unit of X-ray Radiation.

MITRA.

Calcutta Medical Journal, May, 1931.

1. A skin-erythema-dose has been found to be 600 R or 639·6 R according to the Seva Sadan standard.

2. The minimum and maximum limits of skin-erythema-dose have been found to be 480 R and 663 R, respectively, thus giving a mean value of 571 R, which nearly approximates Kuestner's dose (550 R).

3. Once a Biological dose has been standardised, and the corresponding physical dose estimated, one can solely depend on physical dose, which can be taken as fairly constant for skin-erythema-dose. There might be individual variations in Biological dose, and it takes a long time to estimate the same. After a laborious investigation and observation, the Biological dose upon Indian skin (Seva Sadan standard) has been estimated and put in the physical standard after Kuestner's principle. If this dose be followed in India by radiologists, *i.e.*, if the standard for S. Ed. (Seva Sadan Standard) be taken as 600 R, and the individual Roentgen apparatus thus adjusted, it is hoped that a fairly uniform and satisfactory result in deep Roentgen therapy will be obtained and it shall be possible to compare the results with those on the other side of the sea, and thus the international unit of X-ray radiation will be put on a sounder basis.

S. K. S.

A Side-light to Roentgen-Therapy.

Mitra.

Calcutta Medical Journal, September, 1926.

It is evident from the processes followed by the pioneer radiologists, that they are working very hard to get at the truth; but they are working in their own way. Indian radiologists shall have to find out their own ways too. This is very important because of the entirely different climatic conditions and other tropical variations. Things which are true and essential in Europe, might not necessarily be useful here. The physical difference is great and consequently the biological difference will always be appreciable. The experiment on the author to see whether there is any fundamental difference in skin reactions by Roentgen-rays between the Indian and the Europeans showed practically no variation. This may be, that there is no difference, or it might as well be true that because the author was in environments entirely different from India, there appeared no marked change in his skin. However, it would be the first duty of the Roentgenologists in India to work in mutual co-operation, so that they can stand side by side with their brother colleagues on the other side of the sea. The author wants to emphasise that—

1. Radio-therapy is no panacea.
2. Disastrous results may follow when not properly handled.
3. A wonderful remedy in some cases if judiciously administered.

S. K. S.

Experimental observations of the Biological Reactions of deeply penetrating Roentgen-rays upon plants.

Mitra.

Calcutta Medical Journal, August, 1928.

Flowering plants, *e.g.*, cosmos and pansies when exposed to deep Roentgen-rays, with ventil current of 6·5 amperes, and tube current of 4 M.A., using a voltage of 180 K.V. at a distance of 30 c.m. for 25 minutes, show a marked retardation of growth; the flowers too were smaller in size. Similar experiment by Prof. Meyer and Prof. Juengling with sprouting grams and bean, showed retardation of growth.

G. N.

Modern Methods in the Treatment of Carcinoma.

Gurd.

Canad. M. Assocn. F., Dec. 23, 1930.

General discussion of treatment as carried out by different centres in Europe is given but particular care has been taken to describe minute details of the organisation of the Radiumhemment at Stockholm.

It has been pointed out that Radium element is used exclusively instead of emanation. Roentgen therapy is employed in a large measure for cases of breast tumours before and after operation and is also employed before radium in extensive cases of faucial carcinoma associated with inflammation. In cases of carcinoma of vulva electro-co-agulation combined with irradiation has proved satisfactory. In carcinoma of the mouth the treatment is by means of Roentgen therapy, electro-coagulation and introduction of radium tubes. Carcinoma of the breast is treated by pre-operative Roentgen therapy at Stockholm through five portals.

In operable cases this is followed by mammectomy and later by post-operative irradiation through three portals. Radium has not been employed in Stockholm in carcinoma of the rectum but pre and post-operative deep Roentgen therapy is employed. No opinion as to the success of irradiation treatment in gastric and œsophageal carcinoma is given. In carcinoma of the tongue Gask at St. Bartholomew's Hospital employs interstitial irradiation and Cade at Westminster employs a combination of distant radium application, interstitial irradiation and block dissection of the neck, when necessary with post-operative radium at a distance.

S. K. S.

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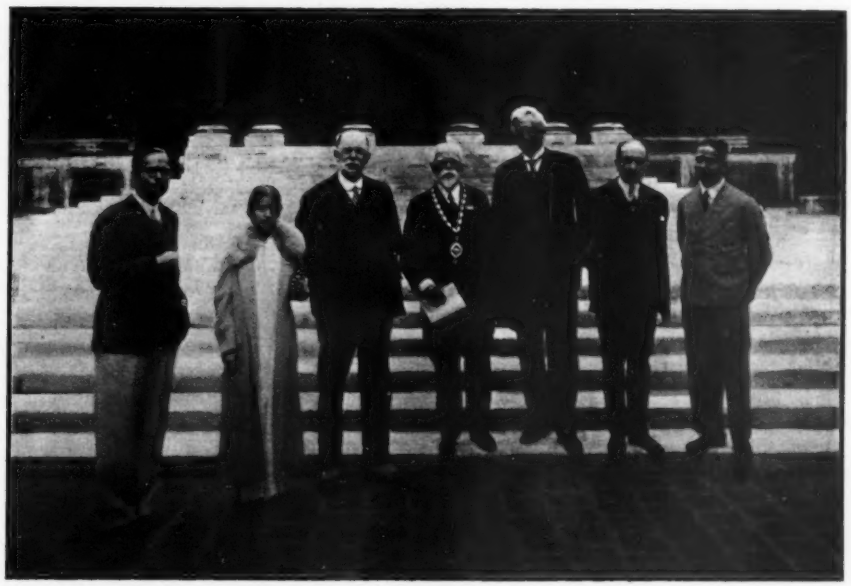
PRESIDENTS OF THE INTERNATIONAL RADIOLOGICAL CONFERENCE

WITH INDIAN DELEGATES AND MEMBERS,
PARIS, 1931.



From Left :

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